GenCore version 5.1.4_p5_4578 Copyright (c) 1993 - 2003 Compugen Ltd.

```
Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Post-processing: Minimum Match 0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                seq length: 0 seq length: 2000000000
          A_Geneseq_101002:*

1: /SIDSZ/gcgdata/g
2: /SIDSZ/gcgdata/g
3: /SIDSZ/gcgdata/g
4: /SIDSZ/gcgdata/g
4: /SIDSZ/gcgdata/g
5: /SIDSZ/gcgdata/g
6: /SIDSZ/gcgdata/g
6: /SIDSZ/gcgdata/g
7: /SIDSZ/gcgdata/g
9: /SIDSZ/gcgdata/g
10: /SIDSZ/gcgdata/g
11: /SIDSZ/gcgdata/
11: /SIDSZ/gcgdata/
11: /SIDSZ/gcgdata/
12: /SIDSZ/gcgdata/
13: /SIDSZ/gcgdata/
14: /SIDSZ/gcgdata/
15: /SIDSZ/gcgdata/
16: /SIDSZ/gcgdata/
17: /SIDSZ/gcgdata/
18: /SIDSZ/gcgdata/
19: /SIDSZ/gcgdata/
20: /SIDSZ/gcgdata/
20: /SIDSZ/gcgdata/
21: /SIDSZ/gcgdata/
22: /SIDSZ/gcgdata/
23: /SIDSZ/gcgdata/
23: /SIDSZ/gcgdata/
23: /SIDSZ/gcgdata/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQ1-EDITED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             908470 segs, 133250620 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     May 13, 2003, 14:00:14; Search time 35 Seconds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Maximum Match 100%
Listing first 45 summaries
SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1990_DAT:*
SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1990_DAT:*
SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1990_DAT:*
SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1991_DAT:*
SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1991_DAT:*
SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1991_DAT:*
SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1991_DAT:*
SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1994_DAT:*
SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1995_DAT:*
SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1997_DAT:*
SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1997_DAT:*
SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1999_DAT:*
SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1999_DAT:*
SIDS2/gcgdata/geneseq/geneseqp-emb1/AA2000_DAT:*
SIDS2/gcgdata/geneseq/geneseqp-emb1/AA2000_DAT:*
SIDS2/gcgdata/geneseq/geneseqp-emb1/AA2000_DAT:*
SIDS2/gcgdata/geneseq/geneseqp-emb1/AA2000_DAT:*
SIDS2/gcgdata/geneseq/geneseqp-emb1/AA2000_DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ANSFLXXLRHGSLXRXCIXX...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /SIDS2/gcgdata/geneseg/genesegp-emb1/AA1984.DAT:*
/SIDS2/gcgdata/geneseg/genesegp-emb1/AA1985.DAT:*
/SIDS2/gcgdata/genesegy/genesegp-emb1/AA1986.DAT:*
/SIDS2/gcgdata/geneseg/genesegp-emb1/AA1987.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /SIDS2/gcgdata/geneseg/geneseqp-emb1/AA1980.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1981.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1983.DAT:*
/SIDS2/gcgdata/geneseq/geneseqp-emb1/AA1983.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                            /SIDS2/gcgdata/geneseq/geneseqp-embl/AA1988.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .....XXAKXIFZdVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (without alignments)
167.515 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    908470
```

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed and is derived by analysis of the total score distribution.

SUMMARIES

10	8 7	തെധ	. 4 د	, ₂ –	Result
173	173 173	181 175	181	181 181	Score
86.9	86.9	91.0 87.9	91.0	. 91.0	Query Match
419 419	44	419 44	419	419 419	Length DB
222	20	202	22	222	BB
AAE08630 AAB82677	AAY18300 AAY18301	AAB82676 AAY18297	AAB82675	AAE08627 AAE08628	ID
Human protein C de Human protein C de	Modified GLA domai Modified GLA domai	Human protein C de Modified GLA domái	Human protein C de Human protein C de	Human protein C de Human protein C de	Description

44	. 4.	42	41	40	39	38	37	36	35	34	ω ω	32	ω μ	30	29	28	27	26	25	. 24	23	22	21	20	19	18	17	16	15	14	13	12	11
169 169	169	169	169	169	169	169	169	169	169	169	169	169	. 169	169	169	169	169	169	169	169	169	169	169	169	169	169	169	169	169	169	169	169	173
84.9	-4	4			4				.4	.~	٠.		4			4					84.9				٠								6.
419 419	419	419	419	419	419	419	419	419	419	419	419	419	419	419	419	419	419	419	419	419	419	419	419	419	419	419	419	419	415	45	44	44	419
23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	22	22	22	22	22	22	19	14	21	19	22	20	22
AAU99022 AAU99023	AAU99021	AAU99020	AAU99019	AAU99018	AAU99017	AAU99016	AAU99015	AAU99014	AAU99013	AAU99012	AAU99011	AAU99010	AAU99009	AAU99008	AAU99007	AAU99006	AAU99005	AAU99004	AAU99003	AAU99002	,AAB36898	AAB36897	AAB36896	AAB36894	AAB82673	AAE08625	AAW72753	AAR35760	AAY56803	57	AAB36402	AAY18303	AAB82678
Human Protein C zy Human Protein C zy		Protein C	cein C	Wild-type human pr	Human mature wild	Primary structure	(PC).	cated humar	al human p		protein C	Human protein C de																					

ALIGNMENTS

RESULT 1 AAE08627 Human; protein C derivative; anticoagulation activity; thrombosis; serpin inactivation; acute coronary syndrome; myocardial infarction; vascular occlusive disorder; hypercoagulable state; angina; sepsis; disseminated intravascular coagulation; DIC; burn; transplantation; sickle cell disease; viral haemorrhagic fever; protein C deficiency; haemolytic uremic syndrome; acute arterial thrombotic occlusion; thromboembolism; prothrombotic disorder; gene therapy; thalassaemia. Gerlitz BE, 01-NOV-2001 (first entry) (ELIL) LILLY & CO ELI. 02-FEB-2001; 2001WO-US01221 16-AUG-2001. WO200159084-A1 Human protein C derivative #1. AAE08627 standard; Protein; 419 AA 11-FEB-2000; 14-MAR-2000; Homo sapiens. Grinnell BW, 2000US-0181948 2000US-0189199 Jones BE;

2001-514662/56 DB; AAD15225.

```
20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       anticoagulation activity. Testistance to serpin inactivation and canticoagulation activity. The serpin inactivation and concerned to wild type concreased sensitivity to thrombin activation compared to wild type concerned to and retains the biological activity of the wild type human concerned to the treatment of acute coronary syndromes e.g. myocardial conferred and unstable angina; and disease states predisposing to conferred the treatment of acute coronary syndromes e.g. myocardial conferred that the conferred to the treatment of acute coronary syndromes e.g. disease in transplantations, conferred that the confer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 protein C derivative for treating acute coronary syndromes, vascular
occlusive disorders, thrombotic disorders and sepsis, comprises
substitutions at specified amino acid positions .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             The invention relates to human protein C derivatives and nucleic acid molecules encoding such derivatives. These derivatives have increased
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Claim 3; Page 46-47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              substitutions at specified amino acid
                                                                                                                 11-FEB-2000;
14-MAR-2000;
                                                                                                                                                                                                                                                                                                                                                                                                  vascular occlusive disorder; hypercoagulable state; angina; sepsis; disseminated intravascular coagulation; DIC; burn; transplantation; sickle cell disease; viral haemorrhagic fever; protein C deficiency; haemolytic uremic syndrome; acute arterial thrombotic occlusion;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    serpin inactivation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Human; protein C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Human protein C derivative #2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        01-NOV-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAE08628;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAE08628 standard; Protein; 419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence
                        Gerlitz BE,
                                                                                                                                                                                     02-FEB-2001; 2001WO-US01221
                                                                                                                                                                                                                                  16-AUG-2001.
                                                                                                                                                                                                                                                                                     WO200159084-A1
                                                                                                                                                                                                                                                                                                                                  Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                   thromboembolism;
                                                                  (ELIL ) LILLY & CO ELI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ب
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  μ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ANSFLEELRHGSLERECIEEICDFEEAKEIFEDVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 l Similarity
34; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      therapy. The present sequence is human protein C derivative.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                 2000US-0181948
2000US-0189199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (first entry)
                        Grinnell BW,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AA;
                                                                                                                                                                                                                                                                                                                                                                                prothrombotic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          derivative; anticoagulation activity; thrombosis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    59pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            91.0%;
77.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    acute coronary syndrome; myocardial infarction;
                           Jones BE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 181; DB
Pred. No. 1.1e
1; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                   disorder; gene therapy; thalassaemia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 419;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
```

Q

1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH

Best Query Match Matches

Local

Similarity

91.0%; 77.3%;

Score 181; Pred. No. 1

DB 22; 1.1e-21;

Length 419; Indels

9,

0

Gaps

0;

Conservative

Вþ

ب

```
disseminated intravascular coagulation (DIC), burns, transplantations, thalassaemia, sickle cell disease, viral haemorrhagic fever and haemolytic uremic syndrome; sepsis in combination with bacterial permeability increasing protein; thrombotic disorders in combination with an anti-platelet agent; protein C deficiency; acute arterial thrombotic occlusion, thromboembolism or stenosis in coronary, cerebral or peripheral arteries or in vascular grafts in combination with a thrombolytic agent. Nucleic acid molecules of the invention are useful for treating humans with genetically predisposed prothrombotic disorders by gene therapy. The present sequence is human protein C derivative.
                                                                                                                                                                                                                                                                                                                                                                                                           anticoagulation activity, resistance to serpin inactivation and increased sensitivity to thrombin activation compared to wild type protein C, and retains the biological activity of the wild type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      substitutions at specified amino acid positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      protein C derivative for treating acute coronary syndromes, vascular occlusive disorders, thrombotic disorders and sepsis, comprises substitutions at specified amino acid positions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  N-PSDB; AAD15226
                                                                                                                                                                                                                                                                                                                               protein C. Protein C derivatives are useful in the manufacture of a medicament for the treatment of acute coronary syndromes e.g. myocardial infarction and unstable angine; and disease states predisposing to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      The invention relates to human protein C derivatives and nucleic acid molecules encoding such derivatives. These derivatives have increased
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Claim 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WPI; 2001-514662/56
                                                                                                                                                                                                                                                                                                         thrombosis, vascular occlusive disorders and hypercoagulable states e.g
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Page 47-48;
  419 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        59pp; English.
```

```
RESULT 3
AAE08629
                                                                                                                                                                                                                        Human; protein C derivative; anticoagulation activity; thrombosis; serpin inactivation; acute coronary syndrome; myocardial infarction; vascular occlusive disorder; hypercoagulable state; angina; sepsis; disseminated intravascular coagulation; DIC; burn; transplantation; sickle cell disease; viral haemorrhagic fever; protein C deficiency; haemolytic uremic syndrome; acute arterial thrombotic occlusion;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-NOV-2001
                                                                                                                                                                                                                                                                                                                                                                                                                 Human protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAE08629;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAE08629 standard; Protein; 419
                                                                        Misc-difference
                                                                                                                                                     Homo sapiens
WO2001:59084 - A1
                                                                                                                                                                                                        thromboembolism;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (first entry)
                                                                        Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                   derivative #3
                                                  /note=
                                                                                                                                                                                                        prothrombotic
                                                  "Encoded by CAA'
                                                                                                                                                                                                           disorder; gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AΑ
                                                                                                                                                                                                        therapy; thalassaemia
```

ET FT

14-MAR-2000;

11-FEB-2000; 02-FEB-2001;

2000US-0181948 2000US-0189199 2001WO-US01221

```
RESULT 4
AAB82675
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              The invention relates to human protein C derivatives and nucleic acid molecules encoding such derivatives. These derivatives have increased anticoagulation activity, resistance to serpin inactivation and increased sensitivity to thrombin activation compared to wild type increased sensitivity to thrombin activation compared to wild type protein C, and retains the biological activity of the wild type human protein C and retains the biological activity of the wild type human protein C. Protein C derivatives are useful in the manufacture of a medicament for the treatment of acute coronary syndromes e.g. myocardial infarction and unstable angina; and disease states predisposing to thrombosis; vascular occlusive disorders and hypercoagulable states e.g. disseminated intravascular coagulation (DIC), burns, transplantations, thalassaemia, sickle cell disease, viral haemorrhagic fever and haemolytic uremic syndrome; sepsis in combination with bacterial permeability increasing protein; thrombotic disorders in combination with an anti-platelet agent; protein C deficiency; acute arterial thrombotytic agent. Nucleic acid molecules of the invention are useful for treating humans with genetically prodisposed prothombotic disorders.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                       Protein C; human; coronary syndrome; thrombosis; angina; myocardial infarction; vascular occlusive disorder; hypercoagulation; sepsis; protein C deficiency; occlusion; thromboembolism; stenosis; antibacterial; immunosuppressive; thrombolvtic: cardiant; antianginal; anticoagulant; therapy;
                 Misc-difference
                                             Misc-difference
                                                                          Misc-difference
                                                                                                                                                    Synthetic
                                                                                                                                                                                               mutant; mutein.
                                                                                                                                                                                                                                                                                                   Human protein C
                                                                                                                                                                                                                                                                                                                                                                                              AAB82675 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Claim
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      substitutions at specified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Protein C derivative occlusive disorders,
                                                                                                        Misc-difference
                                                                                                                                                                  Homo sapiens.
                                                                                                                                                                                                                                                                                                                                  15-OCT-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (ELIL ) LILLY & CO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ANSFLEELRHGSLERECIEEICDFEEAKEIFEDVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2001-514662/56.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     therapy. The present sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Page 48-49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                 (first entry)
                                                                      /note-
32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ą,
               /note= "Asn
194
                                              /note-
33
                                                                                                        Location/Qualifiers
                                                                                                                                                                                                                                                                                                     derivative
 /note=
                                                                                                                                                                                                                                                                                                                                                                                              Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            91.08;
77.38;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   for treating acute coronary syndromes, vascular thrombotic disorders and sepsis, comprises cified amino acid positions -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        59pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BW,
"Leu
                                                           "Gln
                                                                                        "Ser
                                                                                                                                                                                                                                                                                                   (S11G/Q32E/N33D/L194S).
                                                                                                                                                                                                                                                                                                                                                                                              419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Jones
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Pred.
1; Mis
                                                                                        'n
 in wild-type protein'
                               'n
                                                         in wild-type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score
                            wild-type
                                                                                       wild-type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ore 181; DB 22;
ed. No. 1.1e-21;
Mismatches 9;
                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2
                                                         protein"
                                                                                       protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     human protein C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 419;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      derivative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
```

```
DR PT PT
                                                                                                                                                                                                                                   PXPXPX
derivative in which Ser at amino acid position 11 of the mature wild-type protein C sequence (see AAB82673) is substituted with Gly, Gln at position 32 with Glu, Asn at position 33 with Asp, a Leu at position 194 with Ser. The protein is an example of protein and position 195 with Ser.
                                                                                       Novel human protein C derivative for treating, e.g., infarction, unstable angina, sepsis, thrombotic diso arterial thrombotic occlusion, and thromboembolism -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Disulfide-bond
Disulfide-bond
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Disulfide-bond
Disulfide-bond
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Disulfide-bond Disulfide-bond
                                                                     Claim
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Disulfide-bond
                                                                                                                                N-PSDB;
                                                                                                                                                              Gerlitz
                                                                                                                                                                                                     02-FEB-2000;
14-MAR-2000;
                                                                                                                                                                                                                                   19-JAN-2001; 2001WO-US00020
                                                                                                                                                                                                                                                                                                                                                                                       Cleavage-site
                                                                                                                                                                                                                                                                                                                                                                                                                     Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Cleavage-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Disulfide-bond
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Disulfide-bond
                                                                                                                                                                                (ELIL ) LILLY & .CO ELI
                                                                                                                                                                                                                                                                                                         Modified-site
                                                                                                                                                                                                                                                                                                                            Modified-site
                                                                                                                                                                                                                                                                                                                                               Modified-site
                                                                                                                                                                                                                                                                                                                                                                    Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Domain
                                                                                                                                                                                                                                                                                                                                                                                                                                          Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Modified-site
                                                                                                                                          2001-496919/54.
                                                                  3; Page 52-53; 63pp; English.
                                                                                                                                                              BE,
                                                                                                                                AAH26363
                                                                                                                                                              Jones
                                                                                                                                                                                                    2000US-0179801.
2000US-0189197.
                                                                                                                                                                                                                                                                                                        /note-
329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    196..212
331..345
356..384
156..157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  98..109
120..133
141..277
196..212
                                                                                                                                                                                                                                                                                                                            /note=
313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note-
16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note=
50..69
59..64
80..89
                                                                                                                                                                                                                                                                                                                                                /note=
248
                                                                                                                                                                                                                                                                                                                                                                   /note=
29
                                                                                                                                                                                                                                                                                                                                                                                                                     /note- "s
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note=
20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note-
19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note=
14
                                                                                                                                                                                                                                                                                                                                                                                       169..170
                                                                                                                                                                                                                                                                                                                                                                                                                                                             25
                                                                                                                                                                                                                                                                                                                                                                                                                                         26
                                                                                                                                                                                                                                                                                                                                                                                                            /note=
                                                                                                                                                                                                                                                                                               /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "Gla
                                                                                                                                                                                                                                                                                              "N-glycosylated
                                                                                                                                                                                                                                                                                                                                     "N-glycosylated"
                                                                                                                                                                                                                                                                                                                                                         "N-glycosylated"
                                                                                                                                                                                                                                                                                                                "N-glycosylated
                                                                                                                                                                                                                                                                                                                                                                            "thrombin cleavage
                                                                                                                                                                                                                                                                                                                                                                                                                              "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                  "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                 "activation peptide;
2-chain zymogen"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "cleavage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "cleavage makes a 2-chain inactive precursor (155-amino acid light clattached via a disulfide bond to a 262-amino acid heavy chain)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         domain"
                                                                                                                                                                                                                                                                                                                                                                             site"
                                                                                                                                                                                                                                                                                                                                                                                                            removal activates
                                                                                                disorders,
                                                                                                          myocardial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 chain
                                                                                                                                                                                                                                                                                                                                                                                                            the
```

```
Qy
DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
           Disulfide-bond
Disulfide-bond
Disulfide-bond
Cleavage-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               vascular occlusion, thromboembolism, or stenosis in coronary, thrombotic occlusion, thromboembolism, or stenosis in coronary, thrombotic occupancy, thrombotic occupancy, thrombotic occupancy, thrombotic occupancy, thrombotic occupancy, through an intracoronary catheter), protein C deficiency, acute arterial thrombotic occlusion, thromboembolism, or stenosis in coronary,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 C derivatives of the invention that have at least 2 amino acid substitutions, but which have increased anticoagulant activity and resistance to inactivation by serpins compared with the wild-type protein, while retaining the biological activity of the wild-type protein. A method of producing the derivatives using recombinant DNA methods is claimed. The protein C derivatives are useful for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          cerebral or peripheral arteries or in vascular grafts. patients with genetically predisposed prothrombotic dibe treated by gene therapy (all claimed).
                                                                                                                                                                                                                                                                                                                                                                                                     Protein C; human; myocardial infarct
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAB82676 standard; Protein; 419 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         treating coronary syndromes and disease states predisposing to thrombosis (e.g. myocardial infarction and unstable angina),
                                                                         Disulfide-bond
Disulfide-bond
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     15-OCT-2001
                                                                                                  Disulfide-bond Disulfide-bond
                                                                                                                                                                                                                              Misc-difference
                                                                                                                                                                                                                                                     Misc-difference
                                                                                                                                                                                                                                                                                                                 Synthetic
                                                             Disulfide-bond
                                                                                                                          Disulfide-bond
                                                                                                                                                                                                                                                                              Misc-difference
                                                                                                                                                                                                                                                                                                                             Homo sapiens.
                                                                                                                                                     Domain
                                                                                                                                                                                                                                                                                                                                                                   thrombolytic;
                                                                                                                                                                                                                                                                                                                                                                                           ypercoagulation; sepsis; protein C deficiency; occlusion
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    _
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           щ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ANSFLXXLRHGSLXRXCIXXICDFXXAKXIF2DVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                            protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     419
                                                                                                                                                                                                                                                                                                                                                                                                         infarction;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (first entry)
                                                                                                                                                                                                                                                                                                                                                                   sm; stenosis; antibacterial; immunosuppressive;
cardiant; antianginal; anticoagulant; therapy;
                                                                                                                                                                                                                                                                                                                                                                                                                                              a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ΑĄ,
                                   /note= "(
50..69
50..64
80..89
98..109
120..133
141..277
196..212
331..345
                                                                                                                                                                            /note=
254
                                                                                                                                                                                                                              /note=
33
                                                                                                                                                                                                                                                       /note=
32
                                                                                                                                                                                                                                                                                                                                                                                                                                              derivative
             356..384
156..157
                                                                                                                                                                                                     /note= "Asn
194
                                                                                                                                                                                                                                                                              Location/Qualifiers
                                                                                                                                                              /note=
 /note=
                                                                                                                                                                                                                                                                                                                                                                                                        coronary syndrome; thrombosis; ar tion; vascular occlusive disorder;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                91.0%;
77.3%;
                                                                                                                                                                                         "Leu
                                                                                                                                                                                                                                                                  "Ser
                                                                                                                                                                "Thr in wild-type protein'
                                                                                                                                                                                                                                          "Gln in wild-type protein'
                                                                                                                                         "Gla
"cleavage makes
                                                                                                                                                                                                                                                                                                                                                                                                                                              (S11G/Q32E/N33D/L194S/T254S).
                                                                                                                                                                                          in
                                                                                                                                                                                                                                                                  in wild-type protein"
                                                                                                                                         domain"
                                                                                                                                                                                                                 in wild-type protein'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 181; DB 22;
Pred. No. 1.1e-21;
                                                                                                                                                                                         wild-type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
  a
  2-chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 419;
                                                                                                                                                                                                                                                                                                                                                                                                                      angina;
   inactive
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            disorders may
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ;
```

```
substitutions, but which have licreases where the wild-type resistance to inactivation by serpins compared with the wild-type protein, while retaining the biological activity of the wild-type protein. A method of producing the derivatives using recombinant protein. A method of producing the derivatives are useful for DNA methods is claimed. The protein C derivatives are useful for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Cleavage-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Modified-site
                                                            treating coronary syndromes and disease states predisposing to thrombosis (e.g. myocardial infarction and unstable angina), vascular occlusive disorders and hypercoagulable states, sepsis combination with bactericidal permeability increasing protein or
                                                                                                                                                                                                                                                             sequence (see AAB2673) is substituted with Gly, Gln at position 3; with ASD, Leu at position 194 with Sel and Thr at position 254 with Ser. It is an example of protein C derivatives of the invention that have at least 2 amino acid substitutions, but which have increased anticoagulant activity and substitutions, but which have increased anticoagulant activity and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Novel human protein C derivative for treating, e.g., myocardial infarction, unstable angina, sepsis, thrombotic disorders, acute arterial thrombotic occlusion, and thromboembolism -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               N-PSDB; AAH26364.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gerlitz BE, Jones
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       02-FEB-2000;
14-MAR-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              09-AUG-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WO200157193-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Modified-site
                                                                                                                                                                                                                                                                                                                                                                                          The present sequence is that of a claimed human protein C derivative in which Ser at position 11 of the mature wild-type protein C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Claim 4; Page 53-54; 63pp; English.
                                           with tissue factor pathway inhibitor), thrombotic disorders (in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (ELIL ) LILLY & CO ELI.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              19-JAN-2001; 2001WO-US00020
                      combination with an anti-platelet agent or by local delivery through
intracoronary catheter),
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2001-496919/54.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2000US-0179801.
2000US-0189197.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note=
329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note=
313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /note=
29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  169..170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              158.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "N-glycosylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "N-glycosylated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "N-glycosylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "thrombin cleavage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  "activation peptide;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "N-glycosylated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             precursor (155-amino acid light chain attached via a disulfide bond to a 262-amino acid heavy chain)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2-chain zymogen"
protein
  a
  deficiency, acute
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       removal activates
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       myocardial
                                                                            or
                                                                                                        (in
                                                                                                                                                                                                                                                                                                                                                         Ser
```

FIT

```
á
                                                                                RESULT 6
AAY18297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SSSSSSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               XXX
                                 Query Match
Best Local S
Matches 42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local S
Matches 34
                                                                                                 This sequence represents a modified GLA (gamma-carboxyglutamic acid) domain. The invention relates to a vitamin K-dependent polypeptide comprising a modified GLA domain containing an amino acid substitution which enhances membrane binding of the modified polypeptide as compared to the native polypeptide. The polypeptide is used to treat a clotting disorder by decreasing or increasing clot formation. Modification of the GLA domain results in a protein which has enhanced membrane binding affinity as compared to the native protein.
                                                                                                                                                                                                                                                                 WPI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    thrombotic occlusion, thromboembolism, or stenosis in coronary, cerebral or peripheral arteries or in vascular grafts. Human patients with genetically predisposed prothrombotic disorders may be treated by gene therapy (all claimed).
                                                                               Sequence
                                                                                                                                                                                                       Claim 6; Page 78; 86pp; English.
                                                                                                                                                                                                                             Vitamin K-dependent polypeptide with modified gamma-carboxyglutamic acld domain, useful for treating clotting disorders
                                                                                                                                                                                                                                                                                                                                                                                                          W09920767-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GLA domain; mutein; vitamin K-dependent protein; clotting disorder;
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Homo sapiens
Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Modified GLA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAY18297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAY18297 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence
                                                                                                                                                                                                                                                                                         Nelsestuen GL;
                                                                                                                                                                                                                                                                                                               (MINU ) UNIV MINNESOTA
                                                                                                                                                                                                                                                                                                                                       23-OCT-1997;
                                                                                                                                                                                                                                                                                                                                                             20-OCT-1998;
                                                                                                                                                                                                                                                                                                                                                                                   29-APR-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   17-AUG-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        therapy.
         1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               فسؤ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
                                                                                                                                                                                                                                                                  1999-288309/24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ANSFLEELRHGSLERECIEEICDFEEAKEIFEDVDDTLAFWSKH
l Similarity
42; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                              44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  419
                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first
                                                                               ξ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ą
                                                                                                                                                                                                                                                                                                                                      97US-0955636
                                                                                                                                                                                                                                                                                                                                                             98WO-US22152
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                              peptide;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          of vitamin K-dependent protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  entry)
                                            87.9%;
95.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               91.0%;
77.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score
Pred.
                                           Score 175; DB 2
Pred. No. 1e-21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Š
                                Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ± 181;
'\`\`\ 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 22;
l.1e-21;
                                                       20;
                                 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                      Length 44;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 419;
          44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              44
                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                        or glutamic
                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0,
                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0;
```

```
RESULT 8
AAY18301
ID AAY1
XEXTX
                                                                                                                                                                                                                              8 x 0 0 0 0 0 0 0 0 x 8
                                                                                                                                     밁
                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                                                                                     XY PT
                                                                                                                                                                                                                                                                                                                                                                                                       DR
XX
                                                                                                                                                                                                                                                                                                                                                                                                                              YX PA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PFX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            \overset{\mathsf{X}}{\mathsf{X}}\overset{\mathsf{Q}}{\mathsf{X}}\overset{\mathsf{X}}{\mathsf{X}}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ħ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ъ
                                                                                                                                                                                Matches
                                                                                                                                                                                            Best
                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                              This sequence represents a modified GLA (gamma-carboxyglutamic acid) domain. The invention relates to a vitamin K-dependent polypeptide comprising a modified GLA domain containing an amino acid substitution which enhances membrane binding of the modified polypeptide as compared to the native polypeptide. The polypeptide is used to treat a clotting disorder by decreasing or increasing clot formation. Modification of the GLA domain results in a protein which has enhanced membrane binding affinity as compared to the native protein.
         Modified GLA
                                17-AUG-1999
                                                                                                                                                                                                                              Sequence
                                                                                                                                                                                                                                                                                                                                                                               Vitamin K-dependent acid domain, useful
                                                                           AAY18301 standard;
                                                                                                                                                                                                                                                                                                                                                         Claim
                                                                                                                                                                                                                                                                                                                                                                                                                  WPI; 1999-288309/24.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAY18300
                                                                                                                                                                                                                                                                                                                                                                                                                                        Nelsestuen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     23-OCT-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          20-OCT-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 29-APR-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WO9920767-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        therapy,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GLA domain;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Modified GLA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 17-AUG-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAY18300 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                             (MINU ) UNIV MINNESOTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Homo sapiens
                                                                                                                                                                                           Local Similarity
                                                                                                                                 سر
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ANSFLXXLRHSSLXRXCIXXICDFXXAKXIFEDVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                       9; Page 79; 86pp; English.
                                                                                                                                                                                42;
                                                                                                                                                                                                                              44 AA;
                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                mutein; vitamin K-dependent protein; clotting disorder;
        domain
                               (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     97US-0955636
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         98WO-US22152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note=- "Xaa=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              peptide; 44
                                                                          peptide;
        of vitamin
                                                                                                                                                                                                                                                                                                                                                                            polypeptide with modified gamma-carboxyglutamic for treating clotting disorders
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                entry)
                                                                                                                                                                                           86.9%;
95.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        vitamin K-dependent protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "Xaa= gamma-carboxyglutamic acid, or glutamic acid" \ensuremath{\mathsf{acid}}"
                                                                           44
                                                                                                                                                                                ۲.
                                                                                                                                                                                           Score
Pred.
        K-dependent protein
                                                                           Ā
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ą
                                                                                                                                                                                Mismatches
                                                                                                                                                                                2 173; LL
NO. 2.1e-21;
                                                                                                                                                                                                   Length
                                                                                                                                                        44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      44
                                                                                                                                  44
                                                                                                                                                                               Indels
                                                                                                                                                                                                       44;
                                                                                                                                                                               0
                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                         the
                                                                                                                                                                               0
```

```
RESULT 9
AAE08630
                                                                                                                                                                                                                                                                                                                                                                                                                                                    QΥ
 g
                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        This sequence represents a modified GLA (gamma-carboxyglutamic acid) domain. The invention relates to a vitamin K-dependent polypeptide comprising a modified GLA domain containing an amino acid substitution which enhances membrane binding of the modified polypeptide as compared to the native polypeptide. The polypeptide is used to treat a clotting disorder by decreasing or increasing clot formation. Modification of the GLA domain results in a protein which has enhanced membrane binding affinity as compared to the native protein.
                                                                                       Human; protein C derivative; anticoagulation activity; thrombosis; serpin inactivation; acute coronary syndrome; myocardial infarction; vascular occlusive disorder; hypercoagulable state; angina; sepsis; disseminated intravascular coagulation; DIC; burn, transplantation; sickle cell disease; viral haemorrhagic fever; protein C deficiency; haemolytic uremic syndrome; acute arterial thrombotic occlusion;
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Claim 9; Page 82;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Vitamin K-dependent polypeptide with modified gamma-carboxyglutamic acid domain, useful for treating clotting disorders
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Nelsestuen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (MINU ) UNIV MINNESOTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    23-OCT-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             20-OCT-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         29-APR-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   W09920767-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Homo sapiens.
Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        therapy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GLA domain; mutein; vitamin K-dependent protein; clotting disorder;
                         WO200159084-A1
                                                                                                                                                                                                                   01-NOV-2001
                                                                                                                                                                                                                                                                        AAE08630 standard; Protein; 419
16-AUG-2001
                                                   Homo sapiens:
                                                                                                                                                                                        Human
                                                                               thromboembolism;
                                                                                                                                                                                                                                                                                                                                                                                                            Local
                                                                                                                                                                                                                                                                                                                                           -
                                                                                                                                                                                                                                                                                                                                                                     1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                    44
                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                   (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                    AA;
                                                                                                                                                                                         C derivative #4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     97US-0955636
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              98WO-US22152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Location/Qualifiers 1..44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note= "Xaa= gamma-carboxyglutamic acid, or glutamic
acid"
                                                                             prothrombotic disorder; gene therapy;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  86pp; English
                                                                                                                                                                                                                                                                                                                                                                                                           95.5%;
                                                                                                                                                                                                                                                                                                                                                                                                           Score 173; DB 20; Pred. No. 2.1e-21;
                                                                                                                                                                                                                                                                          AA.
                                                                                                                                                                                                                                                                                                                                                                                                                         Length 44;
                                                                                                                                                                                                                                                                                                                                           44
                                                                               thalassaemia
                                                                                                                                                                                                                                                                                                                                                                                               0;
                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                  0;
```

```
Qy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DR
DR
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Db
CC protein C, and retains the biological activity of the wild type human CC protein C. Protein C derivatives are useful in the manufacture of a CC medicament for the treatment of acute coronary syndromes e.g. myocardial CC infarction and unstable angina; and disease states predisposing to CC thrombosis; vascular occlusive disorders and hypercoagulable states e.g. CC disseminated intravascular coagulation (DIC), burns, transplantations, CC thalassaemia, sickle cell disease, viral haemorrhagic fever and CC haemolytic uremic syndrome; sepsis in combination with bacterial CC permeability increasing protein; thrombotic disorders in combination CC with an anti-platelet agent, protein C deficiency; acute arterial CC or peripheral arteries or in vascular grafts in combination with a CC or peripheral arteries or in vascular grafts in combination with a CC or treating humans with genetically predisposed prothrombotic disorders CC by gene therapy. The present sequence is human protein C derivative.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local S
Matches 33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  protein C derivative for treating acute coronary syndromes, vascular
occlusive disorders, thrombotic disorders and sepsis, comprises
substitutions at specified amino acid positions :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    molecules encoding such derivatives. These derivatives have incr
anticoagulation activity, resistance to scripin inactivation and
increased sensitivity to thrombin activation compared to wild ty
protein C, and retains the biological activity of the wild type
                                                                                                                                  thromboembolism; stemuthromboembolism; stemuthromboembolism; stemuthrombolism;
                                                                                                                                                                                             Protein C; human; coronary syndrome; thrombosis; armyocardial infarction; vascular occlusive disorder;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Claim 6; Page 50-51; 59pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               N-PSDB; AAD15228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             14-MAR-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              11-FEB-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   02-FEB-2001;
                                  Key
                                                                                                                                                                                                                                                         Human protein C derivative (H10Q/S11G/Q32E/N33D/L194S).
                                                                                                                                                                                                                                                                                                                                  AAB82677;
                                                                                                                                                                                                                                                                                                                                                                    AAB82677 standard; Protein; 419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             The invention relates to human protein C derivatives
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (ELIL ) LILLY & CO
               Misc-difference
                                                                                                                          mutant;
                                                                                    Homo sapiens
                                                                                                                                                         hypercoagulation; sepsis; protein C deficiency; occlusion; thromboembolism; stenosis; antibacterial; immunosuppressiv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Local 5.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2001-514662/56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                ANSFLEELROGSLERECIEEICDFEEAKEIFEDVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                          mutein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Grinnell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2000US-0181948.
2000US-0189199.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2001WO-US01221
                                                                                                                                                                                                                                                                                             (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AA;
             Location/Qualifiers 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      86.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BW,
                                                                                                                                           antianginal;
                                                                                                                                          antibacterial; immunosupp
tianginal; anticoagulant;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Jones
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 173;
Pred. No. 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mismatches
                                                                                                                                                                                                                                                                                                                                                                      ĄĄ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 22;
2.3e-20;
                                                                                                                                             immunosuppressive;
coagulant; therapy;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 419;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 and nucleic acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 increased
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
```

0

/note=

"His in wild-type protein"

```
Disulfide-bond
Disulfide-bond
Disulfide-bond
Novel human protein C derivative for treating, e.g., myocardial infarction, unstable angina, sepsis, thrombotic disorders, acute arterial thrombotic occlusion, and thromboembolism -
                                                                                          02-FEB-2000;
14-MAR-2000;
                                                                                                                                                                                                                                          Cleavage-site
                                                                                                                                                                                                                                                                                                                                                                                                                                             Cleavage-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Disulfide-bond
Disulfide-bond
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Disulfide-bond
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Disulfide-bond Disulfide-bond
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Disulfide-bond
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Misc-difference
                                 N-PSDB;
                                                                                                                                  09-AUG-2001
                                                                                                                                                                           Modified-site
                                                                                                                                                                                                                                                                    Peptide
                                                                                                                                                                                                                                                                                     Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                      Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Domain
                                                                          (ELIL ) LILLY & CO
                                                                                                                                                  WO200157193-A2
                                                                                                                                                                                          Modified-site
                                                                                                                                                                                                          Modified-site
                                                                                                                                                                                                                                                                                                    Modified-site
                                                                                                                                                                                                                                                                                                                     Modified-site
                                                                                                                                                                                                                                                                                                                                    Modified-site
                                                                                                                                                                                                                                                                                                                                                     Modified-site
                                                                                                                                                                                                                                                                                                                                                                    Modified-site
                                                                                                                                                                                                                                                                                                                                                                                      Modified-site
                                                                                                                  19-JAN-2001;
                                 2001-496919/54.
DB; AAH26365.
                                                          BE,
                                                                                          2000US-0179801
2000US-0189197
                                                                                                                  2001WO-US00020
                                                          Jones
                                                                                                                                                                                                                                                                                                                                                                                                                                             98..109
120..133
141..277
196..212
331..345
356..384
156..157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note-
194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note•
33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note-
32
                                                                                                                                                                         /note= "N-glycosylated" 329
                                                                                                                                                                                           /note-
313
                                                                                                                                                                                                                                                                   /note= "
                                                                                                                                                                                                                                                                                    /note-
26
                                                                                                                                                                                                                                                                                                    /note-
25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note= "Leu in wild-type protein"
                                                                                                                                                                                                          /note= "N-glycosylated" 248
                                                                                                                                                                                                                                            169..170
                                                                                                                                                                   note•
                                                                                                                                                                                                                                  note-
                                                                                                                                                                                                                                                            /note-
                                                                                                                                                                                                                                                                                                                             /note=
                                                                                                                                                                                                                                                                                                                                            /note-
                                                                                                                                                                                                                                                                                                                                                             note-
                                                                                                                                                                                                                                                                                                                                                                            note-
                                                                                                                                                                                                                                                                                                                                                                                             /note-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note-
                                                                          ELI
                                                                                                                                                                 "N-glycosylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "Gla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "Gln
                                                                                                                                                                                                  "N-glycosylated"
                                                                                                                                                                                                                                                                                            "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                            "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                             "gamma-carboxylated"
                                                                                                                                                                                                                                  "thrombin cleavage
                                                                                                                                                                                                                                                   "activation peptide; removal activates 2-chain zymogen"
                                                                                                                                                                                                                                                                           "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                             "gamma-carboxylated
                                                                                                                                                                                                                                                                                                                                            "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                             "gamma-carboxylated'
                                                                                                                                                                                                                                                                                                                                                                           "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "Asn in wild-type protein'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "Ser in wild-type protein"
                                                                                                                                                                                                                                                                                                                                                                                                           "cleavage makes a 2-chain inactive precursor (15-amino acid light clattached via a disulfide bond to a 262-amino acid heavy chain)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                domain"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               wild-type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               protein"
                                                                                                                                                                                                                                   site"
                                                                                                                                                                                                                                                                                                                                                                                                                             chain
                                                                                                                                                                                                                                                            the
```

```
AABB2678
ID AABB267
                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       treating coronary syndromes and disease states predisposing to thrombosis (e.g. myocardial infarction and unstable angina), vascular occlusive disorders and hypercoagulable states, sepsis (in combination with bactericidal permeability increasing protein or with tissue factor pathway inhibitor), thrombotic disorders (in combination with an anti-platelet agent or by local delivery through an intracoronary catheter), protein C deficiency, acute arterial thrombotic occlusion, thromboembolism, or stenosis in coronary, cerebral or peripheral arteries or in vascular grafts. Human patients with genetically predisposed prothrombotic disorders may
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   sequence (see AAB2673) is substituted with Gin, Ser at position 11 with Gly, Gln at position 32 with Glu, Asn at position 33 with Asp, and Leu at position 194 with Ser. It is an example of protein C derivatives of the invention that have at least 2 amino acid substitutions, but which have increased anticoagulant activity and resistance to inactivation by serpins compared with the wild-type protein. A method of producing the biological activity of the wild-type protein. A method of producing the derivatives using recombinant DNA methods is claimed. The protein C derivatives are useful for
Disulfide-bond
                                                                      /note-
Misc-difference 194
                                                                                                                                                             /note=
Misc-difference 11
                                                                                                                                                                                          Location/Qualifiers
                                                                                                                                                                                                                                                                                            mutant; mutein.
                                                                                                                                                                                                                                                                                                                      myocardial infarction; vascular occlusive disorder;
hypercoagulation; sepsis; protein C deficiency; occlusion;
thromboembolism; stenosis; antibacterial; immunosuppressiv
                                                                                                                                                                                                                                                                                                                                                                                              Human protein C derivative (H10Q/S11G/Q32E/N33D/L194S/T254S).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Claim 5; Page 54-55; 63pp; English.
                                                          Misc-difference
                                                                                                                 Misc-difference
                                                                                                                                            Misc-difference
                                                                                                                                                                                                                                                 Synthetic.
                                                                                                                                                                                                                                                                                                         thrombolytic; cardiant;
                                                                                                                                                                                                                                                                                                                                                                 Protein C;
                                                                                                                                                                                                                                                                                                                                                                                                                             15-OCT-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAB82678;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAB82678 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence
                                                                                                                                                                                                                                                               Homo sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               in which His at
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            treated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ANSFLEELROGSLERECIEEICDFEEAKEIFEDVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                 human; coronary syndrome; thrombosis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                419 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            by gene therapy (all claimed).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                           (first entry)
                                                                                                                                        /note=
                                                                                                                  /note-
33
/note=
50..69
                                                        /note=
254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            position
                           1..45
                                         /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    86.9%;
75.0%;
                                                                    "Leu
                                                                                                "Asn
                                                                                                                                                          "Ser
             "Gla
                                          "Thr
                                                                                                                                "Gln
                                                                                                                                                                                      "His in wild-type
                                                                                                                                                                                                                                                                                                         antianginal; anticoagulant;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       10 of the mature wild-type protein
               domain"
                                                                                                                               in
                                                                                                                                                          in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       419
                                         in wild-type
                                                                      'n
                                                                                                 'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 173; DB 22;
Pred. No. 2.3e-20;
1; Mismatches 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          of a claimed human
                                                                                                                                                          wild-type
                                                                                                                             wild-type
                                                                    wild-type
                                                                                                wild-type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ₹
                                         protein'
                                                                                                 protein'
                                                                                                                                                                                       protein"
                                                                                                                             protein'
                                                                                                                                                          protein"
                                                                      protein"
                                                                                                                                                                                                                                                                                                       immunosuppressive;
coagulant; therapy;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        protein C derivative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 419;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
```

0;

```
Disulfide-bond
Disulfide-bond
Cleavage-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Disulfide-bond
Disulfide-bond
Disulfide-bond
Disulfide-bond
Disulfide-bond
Disulfide-bond
The present sequence is that of a claimed human protein C derivative in which His at position 10 of the wild-type protein C sequence (see AAB82673) is substituted with Gln, Ser at position 11 with Gly, Gln at position 32 with Glu, Asn at position 33 with Asp, Leu at position 194 with Ser, and Thr at position 254 with Ser. It is an example of protein C derivatives of the invention that have at least 2 amino aci substitutions, but which have increased anticoagulant activity and resistance to inactivation by serpins compared with the wild-type protein, while retaining the biological activity of the wild-type
                                                                                                          Claim
                                                                                                                                                                                                                                                                                                                                                             Modified-site
                                                                                                                                                                                                                                   02-FEB-2000;
14-MAR-2000;
                                                                                                                                                                                                                                                                                                           WO200157193-A2
                                                                                                                                                                                                                                                                                                                                        Modified-site
                                                                                                                                                                                                                                                                                                                                                                                 Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                     Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                        Cleavage-site
                                                                                                                                       Novel human protein C derivative for treating, e.g., myocar infarction, unstable angina, sepsis, thrombotic disorders,
                                                                                                                                                                                                                                                                  19-JAN-2001; 2001WO-US00020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Modified-site
                                                                                                                                                                                                               (ELIL ) LILLY & CO ELI.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Modified-site
                                                                                                                                                                       2001-496919/54.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       fide-)
                                                                                                          6;
                                                                                                                                                                                           BE,
                                                                                                                              thrombotic
                                                                                                          Page
                                                                                                                                                                                                                                  2000US-0179801
2000US-0189197
                                                                                                                                                                                          Jones BE
                                                                                                        56-57; 63pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              59..64
80:.89
98..109
120..133
141..277
196..212
                                                                                                                                                                                                                                                                                                                                         /note=
329
                                                                                                                                                                                                                                                                                                                                                             /note=
313
                                                                                                                                                                                                                                                                                                                                                                                                     /note=
29
                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note=
158..1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note=
25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note=
19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note=
14
                                                                                                                                                                                                                                                                                                                                                                                /note= "N-glycosylated" 248
                                                                                                                                                                                                                                                                                                                                                                                                                          169..170
                                                                                                                                                                                                                                                                                                                            'note= "N-glycosylated'
                                                                                                                                                                                                                                                                                                                                                                                                                                            /note-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     'note=
                                                                                                                             occlusion,
                                                                                                                                                                                                                                                                                                                                                  "N-glycosylated"
                                                                                                                                                                                                                                                                                                                                                                     "N-glycosylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                 "activation peptide; 2-chain zymogen"
                                                                                                                                                                                                                                                                                                                                                                                                               "thrombin cleavage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  "gamma-carboxylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  precursor (155-amino attached via a disulf 262-amino acid heavy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 'cleavage makes
                                                                                                         English.
                                                                                                                             and thromboembolism
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              disulfide bond
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2-chain
                                                                                                                                                                                                                                                                                                                                                                                                               site"
                                                                                                                                                                                                                                                                                                                                                                                                                                            removal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   chain)'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     inactive
d light chain
                                                                                                                                                                                                                                                                                                                                                                                                                                            activates
                                                                                                                                                myocardial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              to
                                                     position
                                acid
```

```
FT SXX XXX DEXXX XXX XXX
                                                                                                                                                                                                                                                                                            PR XX PR XX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAY18303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local S
Matches 33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            treating coronary syndromes and disease states predisposing to thrombosis (e.g. myocardial infarction and unstable angina), vascular occlusive disorders and hypercoagulable states, sepsis (in combination with bactericidal permeability increasing protein or with tissue factor pathway inhibitor), thrombotic disorders (in combination with an anti-platelet agent or by local delivery through an intracoronary catheter), protein C deficiency, acute arterial thrombotic occlusion, thromboembolism, or stenosis in coronary, cerebral or peripheral arteries or in vascular grafts. Human patients with genetically predisposed prothrombotic disorders may be treated by gene therapy (all claimed).
       This sequence is the protein C GLA (gamma-carboxyglutamic acid) domain. The invention relates to a vitamin K-dependent polypeptide comprising a modified GLA domain containing an amino acid substitution which enhances membrane binding of the modified polypeptide as compared to the native polypeptide. The polypeptide is used to treat a clotting disorder by decreasing or increasing clot formation. Modification of the GLA domain results in a protein which has enhanced membrane binding affinity as compared to the native protein.
                                                                                                                                         Disclosure; Page 14; 86pp; English.
                                                                                                                                                                                         Vitamin
                                                                                                                                                                                                                   WPI; 1999-288309/24.
                                                                                                                                                                                                                                                                                                          23-OCT-1997;
                                                                                                                                                                                                                                                                                                                                       20-OCT-1998;
                                                                                                                                                                                                                                                                                                                                                                    29-APR-1999
                                                                                                                                                                                                                                                                                                                                                                                               WO9920767-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            therapy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GLA domain;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAY18303;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAY18303 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            protein. A method of producing DNA methods is claimed. The pro
                                                                                                                                                                                                                                                  Nelsestuen
                                                                                                                                                                                                                                                                             (MINU ) UNIV MINNESOTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     _
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
                                                                                                                                                                        domain,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ANSFLEELRQGSLERECIEEICDFEEAKEIFEDVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       protein C GLA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             33;
                                                                                                                                                                       K-dependent
nain, useful
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           vitamin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AA;
                                                                                                                                                                                                                                                                                                          97us-0955636
                                                                                                                                                                                                                                                                                                                                       98WO-US22152
                                                                                                                                                                                                                                                                                                                                                                                                                                          /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            peptide;
                                                                                                                                                                       polypeptide with modified gamma-carboxyglutamic for treating clotting disorders
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          K-dependent protein; clotting
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            86.98;
75.08;
                                                                                                                                                                                                                                                                                                                                                                                                                            "Xaa= gamma-carboxyglutamic acid"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            The protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score
Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AΑ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             the derivatives using
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         پ 173;
سم. 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              C derivatives are useful
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB 22;
2.3e-20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 419;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                          acid,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             recombinant
                                                                                                                                                                                                                                                                                                                                                                                                                                          or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0
                                                                                                                                                                                                                                                                                                                                                                                                                                        glutamic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              for
                                                                    compared
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0
```

So

Sequence

44

₹

20;

Length 44;

```
ş
                                                                                                                                                                RESULT 13
AAB36402
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ş
                                                   Query Match
Best Local S
Matches 41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                           comprising a modified gamma-carboxy glutamic acid (GLA) domain having at least one amino acid substitution, that enhances membrane binding affinity and the activity of the polypeptide relative to a corresponding native vitamin K-dependent polypeptide and inhibits clot formation.

(I) can have thrombolytic and haemostatic activities, and can be used as an inhibitor of clot formation. (I) is useful for decreasing clot formation in a mammal, a factor VII or factor IX containing a modified GLA domain is useful for increasing clot formation and for treating a location of the superior containing a modified service of the superior containing a sup
                                                                                                                                                                                                         bleeding disorder, including thrombosis and clotting disorders such as haemophilia B, haemophilia B and liver disease. The present sequence represents a human protein C GLA domain sequence, given in the exemplification of the present invention
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Example 5; Page 42; 81pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Novel vitamin K-dependent polypeptide useful for treating clotting disorders such as thrombosis and hemophilia, comprises modified gamma-carboxy glutamic acid domain that enhances membrane binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Nelsestuen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            28-APR-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                09-NOV-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gamma-carboxyglutamic acid domain; factor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Vitamin K-dependent
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Human protein C gamma-carboxyglutamic acid domain SEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAB36402 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (MINU ) UNIV MINNESOTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Homo sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 thrombosis; clotting disorder; haemophilia A; haemophilia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        liver disease.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       actor X;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
     ب
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         present invention
ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a-carboxygiutamic acto womman.

or X; prothrombin; enhanced membrane binding affinity;
or X; prothrombolytic; haemostatic; bleeding disorder;
formation; thrombolytic; haemoshilia A; haemophilia B;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ANSFLXXLRHSSLXRXCIXXICDFXXAKXIFQNVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2001-007226/01
                                                                                 Similarity
                                                                                                                                                           44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2000WO-US11416
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           99US-0302239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    peptide;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        protein;
                                                                                 84.9%;
93.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 84.9%;
93.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            describes a vitamin K-dependent
                                                                              . 28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       44
                                                   Score 169; DB
Pred. No. 1e-2
2; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          factor VII; protein C; GLA omain; factor IX; protein S;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 169; DB 2
Pred. No. le-20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                         le-20;
                                                                                                       Length 44;
     44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         polypeptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ID NO:1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             protein
                                                      0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2;
                                                   0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
```

```
Вb
 ۳
ANSFLXXLRHSSLXRXCIXXICDFXXAKXIFQNVDDTLAFWSKH 44
```

```
pRc/RSV; RSV-PC; amplification, PCR, primer; transfection; anticoagula-
human 293 cell; Protein S; myocardial infarction; venous thrombosis;
disseminated intravascular coagulation; thromboembolic disease; lupus;
adult respiratory distress syndrome; factor V Leiden; stroke.
                Misc-difference 14
                                                                                 Misc-difference
                                                                                                                                                                                                        Gamma carboxylglutamic acid; human protein C; pRc/RSV; RSV-PC; amplification, PCR, primer; 1
                                                                                                                                                                                                                                                                                                                                                       AAW75710 s.tandard; protein; 45
                                                                                                                               Homo sapiens
                                                                                                                                                                                                                                                            Partial human
                                                                                                                                                                                                                                                          protein C amino acid sequence
                                                   /note=
                                                                               Location/Qualifiers
                                 /note=
                               "Gamma carboxylglutamic acid"
"Gamma carboxylglutamic
                                                               "Gamma carboxylglutamic acid"
                                                                                                                                                                                                                                                                                                                                                       AA
                                                                                                                                                                                                                            Gla domain;
 acid"
                                                                                                                                                                                                           anticoagulant;
```

/note-Misc-difference 19 /note= Misc-difference 16 Misc-difference Misc-difference Misc-difference /note≖ 26 /note**-**25 20 29 /note≖ note-"Gamma carboxylglutamic "Gamma "Gamma "Gamma "Gamma carboxylglutamic acid" "Gamma carboxylglutamic acid" carboxylglutamic carboxylglutamic carboxylglutamic acid" acid" acid"

97WO-US20376

25-JUL-1997; 08-NOV-1996; 96US-0745254 97US-0053768

(OKLA-) OKLAHOMA MEDICAL RES

WPI; 1998-286934/25.

Protein C chimeric proteins for use as anticoagulants - having gamma carboxyglutamic acid region replaced with Vitamin K dependent clotting factor e.g. prothrombin

Page 15; 42pp; English.

The present sequence represents the first three exons of the human protein C protein, which contains gamma carboxylgiutamic acid modified residues. This sequence was replaced with the corresponding regions of modified human prothrombin (AAW75709), to create a protein C prothrombin Gla domain chimera. To produce this chimera, the wild type protein C cDNA was ligated into processed with restriction enzymes to remove the first three exons and the first codon of exon four. The prothrombin CDNA was amplified, digested, and then ligated into RSV-PC at the identical site where the protein C CDNA exons ligated into RSV-PC at the identical site where the protein C cDNA exons and been removed. This construct was then transfected into human from which the chimeric protein can be purified.

chimeric protein can be used as a anticoagulant, to treat disorders where protein S is low, some forms of lupus, following stroke or myocardial infarction, after venous thrombosis and in disseminated intravascular coagulation, adult respiratory distress syndrome, in thromboembolic disease or factor V Leiden.

```
DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      888888888888
Вb
                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match 84.9
Best Local Similarity 93.3
Matches 41; Conservative
                                                    Best Local Similarity Matches 32; Conserv
                                                                              Query Match
                                                                                                                                    e.g. stroke; myocardial infarction; unstable angina; sepsis; adult respiratory distress syndrome; sickle cell anemia etc. The truncated protein C retains the activity of full-length protein C but does not undergo C-terminal cleavage, of the heavy chain, during activation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Protein C; truncated; thrombotic disorder; vascular disorder; stroke; hypercoagulable state; myocardial infarction; unstable angina; sepsis; adult respiratory distress syndrome; sickle cell anemia; human.
                                                                                                           Sequence
                                                                                                                                                                                           This represents a human protein C polypeptide having a light chain and a truncated heavy chain. The protein can be produced by standard recombinant methodologies. The truncated protein C is used to treat a wide range of thrombotic or vascular disorders or hypercoagulable states,
                                                                                                                                                                                                                                                               Claim 2; Page 22-23; 23pp; English.
                                                                                                                                                                                                                                                                                           Novel polypeptide useful for treating thrombotic and vascular diseases and hypercoagulation, e.g. stroke -
                                                                                                                                                                                                                                                                                                                                     WPI; 2000-086975/07.
N-PSDB; AAZ46750.
                                                                                                                                                                                                                                                                                                                                                                              Huang L, Riggin RM
                                                                                                                                                                                                                                                                                                                                                                                                                                     01-JUN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 01-JUN-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           09-DEC-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       W09963070-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Truncated human protein C polypeptide.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              27-MAR-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAY56803;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAY56803 standard; Protein; 415 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence
                                                                                                                                                                                                                                                                                                                                                                                                       (ELIL ) LILLY & CO ELI.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         <u>س</u>
              1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIF2DVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ANSFLXXLRHSSLXRXCIXXICDFXXAKXIFQNVDDTLAFWSKH
ANSFLEELRHSSLERECIEEICDFEEAKEIFONVDDTLAFWSKH
                                                                                                           415 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      45 AA;
                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                     98US-0087585
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 99WO-US11969
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            84.9%;
93.2%;
                                                                  84.9%;
72.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2;
                                                                  Score 169; DB 21;
Pred. No. 1.1e-19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 169; DB 1
Pred. No. 1e-20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB 19;
                                                       10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 45;
                                                                              Length 415;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                       0
```

Search completed: May 13, 2003, 14:03:16
Job time: 36 secs

```
Minimum
Maximum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BG BG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score
     81
80
79
79
79
78
78
77
74
77
74
75
68
69
59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PIR_73:*
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query
Match Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    283224 seqs, 96134422 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BLOSUM62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQ1-EDITED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              May 13, 2003, 14:02:03 ; Search time 18 Seconds
     ANSFLXXLRHGSLXRXCIXX....XXAKXIFzdVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Copyright
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                pir1:*
pir2:*
pir3:*
pir4:*
     GenCore version 5.1.4_p5_4578 (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB
146932
KFH07
KFB07
KFB07
KFB07
TBH02
TBH02
TBH02
TBH02
TBH04
KXHUS
A0351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    XXHU
JX0210
S18994
KXBO
EXRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        IJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EXBO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       234.995 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    without alignments)
                    coagulation factor coagulation factor coagulation factor thrombin (EC 3.4.2 thrombin (EC 3.4.2 thrombin (EC 3.6.2 thrombin (EC 3.4.2 thrombin (EC 3.6.2 thrombin (EC 3.6.2 thrombin (EC 3.6.2 thrombin (EC 3.6.2 thrombin factor plasma protein S possible plasma protein S possible plasma protein S possible protein S poss
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Description
     growth arrest-spec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          coagulation factor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 coagulation factor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              n C (activat
n C (activat
n C (activat
n C (activat
```

45	44 4		42							35	34 5	33	32	31	30	
47	17.5	48	48	48	18.5	49	49	49	49	52	52.5	54.5	56.5	57	58	
23.6	23.9	24.1	24.1	24.1	24.4	24.6	24.6	24.6	24.6	26.1	26.4	27.4	28.4	28.6	29.1	
182	323	1298	1235	558	510	1694	1684	1363	730	606	576	603	594	678	674	
N	ν	Ŋ	N	H	N	Ν	Ν	Ν	N	N	N	N	N	N	Ν	
JC1189	T25948	A48999	D32433	S27994	E82918	A83512	T02367	I58375	G64062	T40556	G96763	C96575	D84859	B48089	15547,6	
tyrosine kinase re	hypothetical prote	protein-tyrosine k	VSG expression sit	alcohol dehydrogen	.ammonium transport	hypothetical prote	hypothetical prote	protein-tyrosine k	primosomal replica	hypothetical prote	probable MAP kinas	probable MAP kinas	probable MAP kinas	growth arrest-spec	growth potentiatin	

ALIGNMENTS

7-Mar 1987 #tex 7789; A00927 W. Gene for human Gene for human 133; PIDN:AAA601 Crabtree, G.F. 1986 he human protein B; PMID:3511471 33; PIDN:AAA601 770, 1984 1770, 1984 1770, 1984 1770, 1984 179; PIDN:AAA601 22; PIDN:AAA601 22; PIDN:AAA601 22; PIDN:AAA601 23; PIDN:AAA601 24; PMID:6589622 39; PMID:69628 44; PMID:2991850 45; PMID:1694170 46; PMID:1544894 47; PMID:1544894 48; PMID:1544894 49; PMID:1544894 49; PMID:1544894 40; PMID:1544894 41; PMID:1544894 42; PMID:1544894 43; PMID:1544894 44; PMID:1544894	RESULT 1 KXHU protein C (activated) (EC 3.4.21.69) precursor - human N;Alternate names: autoprothrombin IIA; plasma protein C
--	---

```
F;140-1/JVJUMGALII. DURANGE F;200-461/Product: protein C heavy chain #status predicted <hch>
F;200-461/Product: protein C heavy chain #status experimental <APT>
F;200-211/Domain: activation peptide #status experimental <APT>
F;200-211/Domain: trypsin homology <TRY>
F;212-445/Domain: trypsin homology <TRY>
F;212-445/Domain: trypsin homology <TRY>
F;48,49,56,58,61,62,68,71/Modified site: gamma-carboxyglutamic acid (Glu) #status experimental F;59-64,92-105,101-120,122-131,140-151,147-160,162-175,183-319,238-254,373-387,398-426/
F;106-111/Disulfide bonds: #status predicted F;110/Binding site: carbohydrate (Thr) (covalent) #status experimental F;113/Modified site: erythro-beta-hydroxyaspartic acid (Asp) #status experimental
    F;199-211/Domain: activation peptide #status predicted <ACT>
F;212-461/Product: vitamin K-dependent serine proteinase #status predicted <VIT>
F;212-445/Domain: trypsin homology <TRY>
F;417.48,55,57,60,61,66,67,70,76/Modified site: gamma-carboxyglutamic acid (Glu) #status F;112/Modified site: erythro-beta-hydroxyaspartic acid (Asp) #status predicted F;121-130,139-150,146-159,161-174,182-319,238-254,373-387,398-426/Disulfide bonds: #status F;214,290,355/Binding site: carbohydrate (Asn) (covalent) #status predicted F;253,299,402/Active site: His, Asp, Ser #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       C; Keywords: beta-hydroxyaspartic acid; blood coagulation; calcium binding; carboxyglutan F;1-33/Domain: signal sequence #status predicted <SIG>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  protein C (activated) (EC 3.4.21.69) precursor - mouse
N;Alternate names: vitamin K-dependent serine proteinase
C;Species: Mus musculus (house mouse)
C;Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 16-Jun-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               QY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   F;139,290,355/Binding site: carbohydrate (Asn) (covalent) #statu F;211-212/Cleavage site: Arg-Leu (thrombin) #status experimental F;253,299,402/Active site: His, Asp, Ser #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         F;33-42/Domain: propeptide #status predicted <PRO>
F;43-197/Product: protein C light chain #status predicted
E;92-131/Domain: EGF homology <EG1>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              C;Comment: Protein C is synthesized in the liver as a single chain precursor, which is bin, which cleaves a dodecapeptide from the amino end of the heavy chain; this reaction C;Genetics:
                                                                                                                                                                                                                                                                                                                    F;199-461/Domain: heavy chain #status predicted <PCH>
                                                                                                                                                                                                                                                                                                                                                            F;139-174/Domain: EGF homology <EG2>
                                                                                                                                                                                                                                                                                                                                                                                                 F;42-196/Domain: light chain #status predicted <PCL>
F;91-130/Domain: EGF homology <EG1>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              F;34-41/Domain: propeptide #status predicted <PRO>F;42-196,199-461/Product: protein C #status predicted <PRC>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        C; Superfamily: coagulation factor X; EGF homology; Gla domain homology; trypsin homolog;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Map position: 2q13-2q21
A; Introns: 24/1; 79/3; 88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             C; Comment: Protein C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Experimental source: liver
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Cross:references: GB:D10445; NID:g220385; PIDN:BAA01235.1; PID:g220386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Title: Isolation and characterization of A; Reference number: JX0210; MUID:92316897;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         R; Tada, N.; Sato, M.; Tsujimura,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        F;140-175/Domain: EGF homology <EG2>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Cross-references:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Gene: GDB: PROC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Residues: 1-461 <TAD>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Molecule type: mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Accession: JX0210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Superfamily: coagulation factor X; EGF homology; Gla domain homology; trypsin homolog; Keywords: anticoagulant; beta-hydroxyaspartic acid; blood coagulation; calcium binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Accession:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      27-86/Domain: Gla domain homology <GLA>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           27-85/Domain: Gla domain homology <GLA>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                 12-196/Domain:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Biochem. 111, 491-495, 1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /Binding site: carbohydrate (Asn) (covalent)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /Domain: signal sequence #status
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              43
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ANSFLEELRHSSLERECIEEICDFEEAKEIFONVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
402/Active site: His, Asp, Ser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          JX0210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GDB:120317; OMIM:176860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     is the zymogen of the vitamin K-dependent serine proteinase that
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        88/1; 134/1; 179/1; 226/3; 266/1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 84.9%;
72.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A.; Iwase,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 169; DB 1;
Pred. No. 1.4e-19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       predicted <SIG>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            a mouse protein C cDNA. PMID:1618739
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             R. ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Hashimoto-Gotoh,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (partial)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 461;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  #status
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  atypical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
```

ď

R;Long, G.L.; Balagaje, R.M.; MacGillivray, R.T.A. Proc. Natl. Acad. Sci. U.S.A. 81, 5653-5656, 1984 A;Title: Cloning and sequence of liver cDNA coding

for bovine

protein

protein C (activated) (EC 3.4.21.69) precursor - bovine (fragment) N;Alternate names: autoprothrombin IIA; plasma protein C C;Species: Bos primigenius taurus (cattle) C;Date: 30.Nov-1980 #sequence_revision 17-Mar-1987 #text_change 16 C;Accession: A26250; A18385; A18386; A00928

A;Reference number: A26250; MUID:85014826; PMID:6091100 A;Accession: A26250

A; Molecule type: mRNA

1-456 <LON>

Stenflo,

```
F:139-174/Domain: EGF homology <EG2>
F:213-445/Domain: trypsin homology <TRY>
F:213-445/Domain: trypsin homology <TRY>
F:417,48.55.57.60.61.66.67.70.76.Woodified site: gamma-carboxyglutamic acid (Glu)
F:112/Woodified site: erythro-beta-hydroxyaspartic acid (Asp) #status predicted
F:112-130.139-150.146-159.161-174.182-320.239-255.373-387.398-426/Disulfide bor
                                           Qy
                                                                                                                                                                   F;215,291,355/Bluarny ....
F;254,300,402/Active site: His,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          R;Okafuji, T.; Maekawa, K.; Nawa, K.; Marumoto, Y. Biochim. Biophys. Acta 1131, 329-33, 1992 A;Title: The cDNA cloning and mRNA expression of rat protein A;Reference number: S24312; MUID:92329550; PMID:1627650
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                R;Okafuji, T.; Maekawa, K.; Nawa, K submitted to the EMBL Data Library,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QУ
В
                                                                                                                                                                                                                                                                                                                                        F;43-461/Product: protein C #status predicted <PRC>F;91-130/Domain: EGF homology <EG1>F;139-174/Domain: EGF homology <EG2>
                                                                                                                                                                                                                                                                                                                                                                                                                F;33-42/Domain: propeptide #status predicted <PRO>
                                                                                                                                                                                                                                                                                                                                                                                                                                            F;27-85/Domain: Gla domain homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                C; Keywords: beta-hydroxyaspartic acid; glycoprotein; h: F; 1-32/Domain: signal sequence #status predicted <SIG>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Cross-references: EMBL:X64336; NID:g56962; PIDN:CAA45617.1; PID:g56963 C;Superfamily: coagulation factor X; EGF homology; Gla domain homology;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Residues: 1-461 < OKA2>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Molecule type: mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Reference number: S24312;
A; Accession: S24312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Residues: 1-461 <OKA>
A;Cross-references: EMBL:X64336; NID:g56962; PIDN:CAA45617.1; PID:g56963
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Molecule type: mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Accession: S18994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A, Reference number: S18994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Description: The cDNA cloninig and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   C;Date: 10-Sep-1999 #sequence_revision C;Accession: S18994; S24312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    protein C (activated) (EC 3.4.21.69) prec
C; Species: Rattus norvegicus (Norway rat)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S18994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Best Loc
Matches
                                                                                                                       Best
                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                Matches
                                                                                                                                                                                                                   291,355/Binding site: carbohydrate
42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     42
                                                                                                                       Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
ANSFLEEVRAGSLERECMEEICDFEEAQEIFQNVEDTLAFWIKY
                                             ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ANSFLEEMRPGSLERECMEEICDFEEAQEIFQNVEDTLAFWIKY
                                                                                                l Similarity
26; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   l Similarity
26; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                K.; Nawa, K.; Marumoto, Y. ata Library, February 1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     70.4%;
59.1%;
                                                                                                                  69.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        3.4.21.69) precursor - rat
                                                                                                                                                                                            Asp, Ser #status predicted
                                                                                                                     Score 139; DB 1; Pred. No. 1.1e-14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 140; DB 1; Pred. No. 7.7e-15;
                                                                                                                                                                                                                                                                                                                                                                                                                                            <GLA>
                                                                                                Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            mRNA expression
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             10-Sep-1999 #text_change 29-Oct-1999
                                                                                                                                                                                                                      (Asn) (covalent) #status
                                                                                                                                            Length 461;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 461;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         hydrolase; serine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            of rat protein
                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                0,
                                                                                                                                                                                                                      predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                trypsin homol
                                                                                                                                                                                                                                                                                          (Glu) #stat
                                                                                                                                                                                                                                            bonds: #s
                                                                                                0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
```

```
G:Comment: Protein C is synthesized in the liver as a single chain precursor, which is claim, which cleaves a tetradecapeptide from the amino end of the heavy chain; this reacting C:Comment: Calcium binds to the gamma-carboxyglutamic acid (Gla) residues and, with streed cognition of the thrombin-thrombomodulin complex.

C:Comment: The gamma-carboxyglutamic acid residues arise by a posttranslational, vitaming: C:Superfamily: coagulation factor x; Egf homology; Gla domain homology; trypsin homology; C:Reywords: anticoagulant; beta-hydroxyaspartic acid; blood coagulation; calcium binding c:1-29/Domain: signal sequence (fragment) *status predicted <SIG>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  F;24-83/Domain: Gia domain homology <GLA>
F;30-99/Domain: propeptide #status predicted <PRO>
F;40-194/Product: protein C light chain #status experimental <LCH>
F;40-194/Product: protein C light chain #status experimental <LCH>
F;98-128/Domain: EGF homology <EGI>
F;137-172/Domain: EGF homology <EGI>
F;137-172/Domain: EGF homology <EGI>
F;197-456/Product: protein C heavy chain #status experimental <HCH>
F;197-456/Product: protein C heavy chain #status experimental <APT>
F;197-210/Domain: activation peptide #status experimental <APT>
F;211-440/Domain: trypsin homology <TRY>
F;45,46,53,55,58,59,62,64,65,68,74/Modified site: gamma-carboxyglutamic acid (Glu)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Contents: annotation; activation; calcium binding
A;Contents: annotation; activation; calcium binding
R;Johnson, A.E.; Esmon, N.L.; Laue, T.M.; Esmon, C.T.
J. Blol. Chem. 258, 5554-5560, 1983
A;Title: Structural changes required for activation of protein C are induced by Ca2+ b
A;Reference number: A37542; MUID:83213514; PMID:6406503
A;Contents: annotation; activation; calcium binding
C;Comment: Protein C is the zymogen of the vitamin K-dependent serine proteinase that
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Proc. Natl. Acad. Sci. U.S.A. 80, 1802-1806, 1983
A;Title: beta-Hydroxyaspartic acid in vitamin K-dependent
A;Reference number: A19316; MUID:83169769; PMID:6572939
A;Contents: annoteation; revision to residue 110
R;Stenflo, J.; Fernlund
                                                                                                                                                                    C;Species: Rattus norvegicus (Norway rat)
C;Date: 31-Jan-1995 #sequence_revision 07-Feb-1997 #text_change
                                                                                                                                                                                                                                                                                                                                                                                                    문
                                                                                                                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          R;Stenflo, J.; Fernlund, P.
J. Blol. Chem. 257, 12180-12190, 1982
A;Title: Amino acid sequence of the heavy chain of bovine A;Reference number: A18386; MUID:83007326; PMID:6896877
A;Accession: A18386
             A;Title: Evidence for competition between vitamin K-dependent clotting factors for A;Reference number: A58498; MUID:96093366; PMID:8578539
                                                                                                                                          C; Accession:
                                                                                                                                                                                                                                      coagulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Molecule type: protein A; Residues: 40-194 <FER>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Reference number: A; Accession: A18385
                                                                     Inromb. Res. 80,
                                                                                                         R;Stanton, C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Title:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Molecule type: protein A; Residues: 197-454, 'PV'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               136,289,350/Binding site: carbohydrate (Asn) (covalent) #status predicted 252,298,397/Active site: His, Asp, Ser #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              252,298,397/Active site: His, Asp, Ser *status predicted 366/Binding site: carbohydrate (Asn) (covalent) *status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Note: 82-Lys was also
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          110/Modified site: erythro-beta-hydroxyaspartic acid (Asp) #status experimental 119-128,137-148,144-157,159-172,180-318,237-253,368-382,393-421/Disulfide bonds
                                                                                                                                                                                                                                                                                                                                                                                                    40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                         1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Chem. 257,
Amino acid
                                                                                                                                                                                                                                                                                                                                                                                              ANSFLEELRPGNVERECSEEVCEFEEAREIFQNTEDTMAFWS
                                                                                                                                                                                                                                   factor Xa (EC 3.4.21.6) precursor -
                                                                                                                                S49075; JC4670; PS0191;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                        Ross, P.; Hutson,
), 63-73, 1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   12170-12179, 198
sequence of the
A18385; MUID:830
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         <STE>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61.3%;
50.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MUID:83007325;
                                                                                                      191; PS0190;
S.; Wallin,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 122; DB Pred. No. 6.7e 9; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   light chain of bovine 107325; PMID:6896876
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB 1;
5.7e-12;
                                                                                                                                          162745
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 456;
                                                                                                                                                                                                                                                                                                                                                                                              81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  protein
                                                                                                                                                                       08-Dec-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    bonds:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 #sta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               #sta
                                          intra
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              bii
coagulation factor xa (EC 3.4.21.6) precursor - bovine
N;Alternate names: Stuart factor
C;Species: Bos primigenius taurus (cattle)
C;Date: 24-Apr-1984 #sequence_revision 17-Mar-1987 #text_change 16-Jul-1999
                                                                                                                                          EXBO
                                                                                                                                                                                                                                                                ₽
                                                                                                                                                                                                                                                                                                                        Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Title:
```

```
Eur. J. Haematol. 52, 162-168, 1994
A,Tille: Analysis of the partial nucleotide sequences and deduced a,Reference number: 146196; MUID:94222160; PMID:8168596
A;Recession: 162745
A;Reterence number: 146196; MUID:94222160; PMID:8168596
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          E;41-179/Product: coagulation factor X light chain #status predicted E;90-121/Domain: EGF homology <EGI>
E;129-164/Domain: EGF homology <EGI>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Molecule type: DNA
A;Residues: 295-383,'G',385-455 <MUR>
A;Cross-references: GB:D21215; NID:9415309; PIDN:BAA04756.1; PID:9455396
                                                                                                                                                                                                                                                                                              F;103/Modified site: erythro-beta-hydroxyaspartic acid (Asp) #status p:F;187/Binding site: carbohydrate (Asn) (covalent) #status experimental F;208/Binding site: carbohydrate (Thr) (covalent) #status predicted F;218/Binding site: carbohydrate (Asn) (covalent) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                           F:233-482/Product: coagulation factor Xa heavy chain #status predicted <ACT>
F:232-460/Domain: trypsin homology <FRY>
F:446.47.54.56.59.60.55.66.69.72.79/Modified site: gamma-carboxyglutamic acid (Glu) #s
F:57-62.90-101.95-110.112-121.129-140.136-149.151-164.172-340.238-243.259-275.388-402
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    F;129-164/Domain: EGF homology <EG2> F;183-482/Product: coagulation factor X heavy chain *status predicted <HCH> F;183-231/Domain: activation peptide *status predicted <APT>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C; Keywords: beta-hydroxyaspartic acid; blood coagulation; calcium binding; carboxyglu F; 1-23/Domain: signal sequence #status predicted <SIG>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Pathway:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Description:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            C; Function:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Status: preliminary; translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Molecule type: protein
A; Residues: 183-186, 'X', 188-207 <ENJ2>
R; Murakawa, M.; Okamura, T.; Kamura, T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Accession: PS0190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Molecule type: protein A; Residues: 41-58, 'X', 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Accession: PS0191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Molecule type: mRNA
A; Residues: 1-482 <STA2>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Title: Processing and expression of rat and human clotting A; Reference number: JC4670; MUID:96194815; PMID:8647460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gene 169,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Note: submitted to the EMBL Data Library, June 19 A; Note: neither the complete nucleic acid sequence R; Stanton, C.; Ross, R.P.; Hutson, S.; Wallin, R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Cross-references: EMBL: X79807; NID: g506600; PIDN: CAA56202.1; PID: g506601 A; Note: submitted to the EMBL Data Library, June 1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Accession: S49075
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Reference number: PS0190;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                R; Enjyoji, K.; Miyazaki,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Experimental source: Cos-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Cross-references: EMBL:x79807; NID:g506600; PIDN:CAA56202.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Accession: JC4670
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Residues: 1-482 <STA1>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Molecule type: mRNA
                                                                                                                                                                                                                                        :274,320,417/Active site: His, Asp, Ser #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         24-40/Domain: propeptide #status predicted <PRO> 25-84/Domain: Gla domain homology <GLA>
                                                                                                                                                                                                                                                                        231-232/Cleavage site: Arg-Ile (coagulation factor IXa,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Superfamily: coagulation factor X; EGF homology; Gla domain homology; trypsin homol
                                                                                                                                                                                     Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Biochem. 109,
   41
                                                                                                                                                  Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Characterization of rat factors X nce number: PS0190; MUID:92041742;
                                                      ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
ANSFFEETKKGNLERECVEETCSFEEAREVFEDNEKTTEFWNKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               blood coagulation
                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            catalyzes the proteolytic activation of prothrombin to thrombin in the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   890-898, 1991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          'X',60-65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ×.
                                                                                                                                                  56.3%;
40.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             <ENJ1>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Kato, H.
                                                                                                                                               Score 112;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       and Xa: demonstration PMID:1718949
                                                                                                                                            3.1e-10;
                                                                                                                                                                                  DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        nor the
                                                                                                                                                                            Length 482;
84
                                                                                                                     Indels
                                                                                                                                                                                                                                                                        coagulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            factor-X-encoding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PID:950660:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   of factor
                                                                                                                  0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        primary structures
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Niho,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        translation
                                                                                                                  Gaps
                                                                                                                                                                                                                                                                           factor VIIa)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Хa
                                                                                                                  0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        are
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   rat
```

```
A;Molecule type: protein
A;Residues: 183-292,294-295, 'GDE',299-334,336-348,'AE',351-354,356-441,'GKFG',446-492 <'
A;Residues: 183-292,294-295, 'GDE',299-334,336-348,'AE',351-354,356-441,'GKFG',446-492 <'
A;Rote: carbohydrate binding sites and disulfide bonds were determined
R;Persson, E.; Selander, M.; Linse, S.; Drakenberg, T.; Oehlin, A.K.; Stenflo, J.
J. Biol. Chem. 264, 16897-16904, 1989
A;Title: Calcium binding to the isolated beta-hydroxyaspartic acid-containing epidermal
A;Reference number: A34412; MUID:89380326; PMID:2789221
A;Accession: A34412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Title: The occurrence of beta-hydroxyaspartic acid in the vitamin K-dependent blood A;Reference number: A20274; MUID:83308813; PMID:6688526 A;Contents: annotation; revision to residue 103 R;Titani, K.; Fujikawa, K.; Enfield, D.L.; Ericsson, L.H.; Walsh, K.A.; Neurath, H. Proc. Natl. Acad. Sci. U.S.A. 72, 3082-3086, 1975 A;Title: Bovine factor X-1 (Stuart factor): amino-acid sequence of heavy chain. A;Reference number: A12030; MUID:76053069; PMID:1059093
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Title: Amino acid sequence of the light chain of bovine factor X-1 (Stuart factor). A;Reference number: A14997; MUID:80130563; PMID:6766735
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Cross-references: GB:X00673; NID:g192; PIDN:CAA25286.1; P:R;Enfield, D.L.; Ericsson, L.H.; Fujikawa, K.; Walsh, K.A.; Biochemistry 19, 659-667, 1980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       C;Accession: A22867; A14997; A12030; A34412; S39414; A00925
R;Fung, M.R.; Campbell, R.M.; MacGillivray, T.A.
Nucleic Acids Res. 12, 4481-4492, 1984
A;Title: Blood coagulation factor X mRNA encodes a single polypeptide chain containing A;Reference number: A22867; MUID:84247315; PMID:6330671
A;Accession: A22867.
                                                                                                                                          C; Comment: Factor Xa converts prothrombin to thrombin during blood C; Comment: The two chains are formed from a single-chain precursor C; Comment: The activation peptide is cleaved by factor IXa (in the
                                                                                                                                                                                                                                                             J. Biol. Chem. 261, 4008-4014, 1986
A; Reference number: A38025; MUID:86140210; PMID:3949800
A; Contents: annotation; sulfate binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Contents: annotation; active site
R;Fujikawa, K.; Titani, K.; Davie, E.W.
Proc. Natl. Acad. Sci. U.S.A. 72, 3359-3363, 1975
A;Title: Activation of bovine factor X (Stuart factor):
A;Reference number: A13504; MUID:76053121; PMID:1059122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Title: Identification of O-linked oligosaccharide chains in A; Reference number: S39414, MUID:94062825; PMID:8243461 A; Accession: S39414
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Molecule type: protein
A; Residues: 41-102, 'N', 104-180 <ENF>
A; Residues: 4. Fujikawa, K.; Kisiel, W.
Biochem. Biophys. Res. Commun. 115, 8-14,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Contents: annotation; activation R;Sugo, T.; Bjork, I.; Holmgren, A. J. Biol. Chem. 259, 5705-5710, 1984
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Title: Bovine factor X-1a (activated Stuart factor). Evidence of A; Reference number: A12453; MUID:73053314; PMID:4264286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Molecule type: protein
A;Residues: 183-196;199-209;216-233 <TNO>
A;Residues: 183-196;199-209;216-233 <TNO>
A;Note: carbohydrate binding sites
R;Titani, K.; Hermodson, M.A.; Fujikawa, K.; Ericsson, L:H.; Walsh, K.A.; Neurath,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Note: beta-hydroxyaspartic acid site R;Inoue, K.; Morita, T.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Molecule type: protein A; Residues: 85-126 < PER>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Molecule type: mRNA
A; Residues: 1-487 <FUN>
                                                                                                                                                                                                                                                                                                                                                                                A; Contents: annotation; calcium binding R; Morita, T.; Jackson, C.M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Title: Calcium-binding properties of bovine factor X lacking the gamma-carboxyglutamic A;Reference number: A38024; MUID:84185716; PMID:6546930
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Biochemistry 11,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Accession: Al2030
                               ;Comment: Calcium binds to the ;Comment: The gamma-carboxyglut
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         J. Biochem. 218, 153;163, 1993
                       gamma-carboxyglutamic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    4899-4903, 1972
                               gamma-carboxyglutamic acid (Gla) residues and, with strutamic acid residues arise by a posttranslational, vitamin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A.; Stenflo,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1983
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              conversion of factor Xaalpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PID:g193
.; Neurath, H.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              the activation peptides
                                                                                                                                              clotting.
by the excision
intrinsic pathwa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                homology with mammal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Titani,
                                                                                                                                              pathway),
                               vitamir
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            н.,
                                                                                                                                                                                          of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ç
Gene 41, 311-314, 1986
A;Title: Isolation and characterization of
A;Reference number: A25853; MUID:86221713;
A;Accession: A25853
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Qy
```

F;103/Modified site: erythro-beta-hydroxyaspartic acid (Asp) #status experimental F;200/Binding site: sulfate (Tyr) (covalent) (partial) #status experimental F;208,485/Binding site: carbohydrate (Thr) (covalent) #status experimental 'F;218/Binding site: carbohydrate (Asn) (covalent) #status experimental F;233-234/Cleavage site: Arg-Ile (coagulation factor IXa, coagulation factor VIIa F;240-245,260-276,389-403,414-442/Disulfide bonds: #status experimental F;139-164/Domain: EGF homology <EG2>
F;183-492/Product: coagulation factor X heavy chain #status experimental <HCH>
F;183-233/Domain: activation peptide #status experimental <APT>
F;234-492/Product: coagulation factor Xa heavy chain #status experimental <AHC> C;Superfamily: coagulation factor X; EGF homology; Gla domain homology; trypsin homol C;Keywords: beta-hydroxyaspartic acid; blood coagulation; calcium binding; carboxyqlu F;1-15/Domain: signal sequence #status predicted <SIG> F;240-245,260-276,389-403,414-442/Disulfide bonds: #STATUSF;275,321,418/Active site: His, Asp, Ser <math>#STATUSFF;234-461/Domain: trypsin homology <TRY>
F;46,47,54,56,59,60,65,66,69,72,75,79/Modified site: gamma-carboxyglutamic acid (Glu)
F;57-62,90-101,95-110,112-121,129-140,136-149,151-164,172-341/Disulfide bonds: #statu F;41-180/Product: coagulation factor X light chain *status experimental F;90-121/Domain: EGF homology <EG1> F;16-40/Domain: propeptide #status predicted <PRO>F;25-84/Domain: Gla domain homology <GLA> A; Pathway: blood coagulation A; Description: catalyzes the proteolytic activation of prothrombin to thrombin Query Match Best Local : Local Similarity nes 18; Conserv 1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44 Conservative 54.3%; 40.9%; 9; Score 108; DB 1; Pred. No. 1.4e-09; Mismatches Length 492; Indels 0; Gaps VIIa) 0, in the

41 ANSFLEEVKQGNLERECLEEACSLEEAREVFEDAEQTDEFWSKY 84

A; Title: Gene for human Factor x: a blood coagulation factor whose gene organization A; Reference number: A24478; MUID:87026600; PMID:87026600R; Leytus, S.P.; Foster, D.C.; Kurachi, K.; Davie, E.W. Biochemistry 25, 5098-5102, 1986 C; Date: 15-Nov-1984 #sequence_revision 02-May-1994 #text_change 08-Dec-2000 C; Accession: A24478; JQ0917; A42485; A25853; A22208; A21284; A20362; S39415; coagulation factor Xa (EC 3.4.21.6) precursor [validated] - human N;Alternate names: Stuart factor A; Molecule type: DNA A; Residues: 1-488 <LEY> C; Species: Homo sapiens (man) A; Accession: A24478 S39415; I54051

A;Cross-references: GB:L29433; GB:M14327; NID:g459809; PIDN:AAA52764.1; PID:g182831 R;Messier, T.L.; Pittman, D.D.; Long, G.L.; Kaufman, R.J.; Church, W.R. Gene 99, 291-294, 1991
A;Title: Cloning and expression in COS-1 cells of a full-length cDNA encoding human A;Reference number: JQ0917; MUID:91216473; PMID:1902434
A;Accession: JQ0917.

A; Molecule type: mRNA A; Residues: 1-488 <MES>

A;Cross-references: GB:M57285; NID:g182389; PIDN:AAA52421.1; R;Miao, C.H.; Leytus, S.P.; Chung, D.W.; Davie, E.W. PID:g182390

R;Miao, C.H.; Leytus, S.P.; Chu J. Biol. Chem. 267, 7395-7401,

A;Title: Liver-specific expression of the gene coding for human factor X, a blood A;Reference number: A42485; MUID:92218390; PMID:1313796 A;Accession: A42485

A; Molecule type: DNA A; Residues: 1-15 <MIA>

A; Experimental source: liver
A; Note: sequence extracted from NCBI backbone (NCBIN:93780, NCBIP:93787)
R; Kaul, R, K.; Hildebrand, B.; Roberts, S.; Jagadeeswaran, P.

PMID: 3011603

human blood-coagulation factor

X CDNA

mRNA , 289-488

```
F:24-40/Domain: propeptide #status predicted <PRO>
F:25-84/Domain: Gla domain homology <GLA>
F:41-179/Product: coagulation factor X light chain #status experimental <LCH>
F:90-121/Domain: EGF homology <EGL>
F:129-164/Domain: EGF homology <EGL>
F:129-164/Domain: EGF homology <EGC>
F:183-88/Product: coagulation factor X heavy chain #status experimental <HCH>
F:183-234/Domain: activation peptide #status experimental <APT>
F:235-488/Product: coagulation factor Xa heavy chain #status experimental <ACT>
F:235-489/Product: coagulation factor Xa heavy chain #status experimental <ACT>
F:235-486/Domain: trypsin homology <TRY>
F:235-462/Domain: trypsin homology <TRY>
F:46,47,54,55,59,60,65,66,69,72,79/Modified site: gamma-carboxyglutamic acid (Glu)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Cross-references: GB:M33297; NID:g183860; PIDN:AAA52636.1; PID:g553330 R;Padmanabhan, K.; Padmanabhan, K. P.; Tulinsky, A.; Park, C.H.; Bode, W.; Hube J. Mol. Blol. 232, 947-966, 1993 A;Title: Structure of human des(1-45) factor Xa at 2.2 angstroms resolution. A;Reference number: A49458; MUID:93360277; PMID:8355279 A;Contents: annotation; X-ray crystallography, 2.2 angstroms C;Comment: The two chains held together by one disulfide bond are formed from C;Comment: The activation peptide is cleaved by factor IXa (in the intrinsic percent).
                                                                                                                                                                                                                                                                                                                                                                                                                   C:Superfamily: coagulation factor x; EGF homology; Gla domain homology; trypsin homolog C:Keywords: beta-hydroxyaspartic acid; blood coagulation; calcium binding; carboxyglutar F:1-23/Domain: signal sequence #status predicted <SIG>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Cross-references: GDB:119890; OMIM:227600
A;Map position: 13q34-13q34
A:Introns: 24/1; 77/3; 86/1; 124/1; 150/3; 249/3; 289/1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A:Title: Cloning and characterization of the 5' A:Reference number: I54051; MUID:90128299; PMID A:Accession: I54051
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           R;Inoue, K.; Morita, T.
Eur. J. Blochem. 218, 153-163, 1993
Eur. J. Blochem. 153-163, 1993
A;Title: Identification of O-linked oligosaccharide chains in the activation peptides A;Reference number: S39414; MUID:94062825; PMID:8243461
A;Accession: S39415
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Residues: 13-441,'S',443-488 <FUN>
A;Cross-references: GB:K03194; NID:g182840; PIDN:AAA52490.1; R;Leytus, S.P.; Chung, D.W.; Kisiel, W.; Kurachi, K.; Davie, Proc. Natl. Acad. Sci. U.S.A. 81, 3699-3702, 1984
A;Title: Characterization of a cDNA coding for human factor 1 A;Reference number: A21284; MUID:84222026; PMID:6587384
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                R;Fung, M.R.; Hay, C.W.; MacGilllvray, R.T.A.
Proc. Natl. Acad. Sci. U.S.A. 82, 351-3595, 1985
A;Title: Characterization of an almost full-length cDNA
A;Reference number: A22208; MUID:85216545; PMID:2582420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               R;Jagadeeswaran, P.; Reddy, S.V.; Rao, K.J.; Hamsabhushanam, K.; Lyman, (Gene 84, 517-519, 1989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Molecule type: protein A; Residues: 41-179 <MCM>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Title: Complete amino acid sequence of the light chain A;Reference number: A20362; MUID:83257207; PMID:6871167 A;Accession: A20362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    R:McMullen, B.A.; Fujikawa, K.; Kisiel, Biochemistry 22, 2875-2884, 1983
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  R; Fung,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Pathway: blood
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Description:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Note: deficiency of this factor causes Stuart disease
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Molecule type: DNA
A; Residues: 1-23 < RES>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Status: translation not shown;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Note: glycosylation sites A; Note: identification and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Accession: A22208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Residues: 13-284,'E',289-488 <LE2>
A;Cross-references: GB:K01886
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Molecule type: mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A; Accession: A21284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Cross • references: GB: M22613; NID: g180335; PIDN: AAA51984.1; PID: g180336
57-62/Disulfide bonds: #status predicted 90-101,95-110,112-121,129-140,136-149,151-164,172-342,241-246,261-277,390-404,415-443,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gene: GDB:F10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Molecule type: protein
Residues: 183-234 < INO>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    catalyzes the proteolytic activation of prothrombin to thrombin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               coagulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            translated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Σ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           he 5' end (exon PMID:2612918
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sasagawa,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Τ.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   coding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     of human blood coagulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1) of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Howald,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PID:g182841
E.W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   for human blood
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Σ.
2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gene encoding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Kwa,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Huber,
                                                                                                                                                                                                                                                                                                                                                                                                                                                  carboxyglutar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           m a single-
pathway) o
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    E.Y.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        in the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   coagulat
                                                                             #sta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Wein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     fac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       <u>B</u>1
                                                                                                                                                                                                                                                                                           A; Reference number: A23819; MUID:86205965; A:Accession: A23819
                               A;Reference number: A90539; MUID:89088153; PMID:3264725
A;Accession: A31186
                                                                                                                                            A;Cross-references: GB:M13232; NID:g182799; PIDN:AAA88040.1; R;Thim, L.; Bjoern, S.; Christensen, M.; Nicolaisen, E.M.; Lu Biochemistry 27, 7785-7793, 1988
                                                                                                                                                                                                                                              A; Molecule type: mRNA
A; Residues: 1-466 < HAG>
                                                                                                                                                                                                                                                                                                                                             A;Cross-references: GB:J02933; NID:g180333; PIDN:AAA51983.1; PID:g180334 R;Hagen, F.S.; Gray, C.L.; O'Hara, P.; Grant, F.J.; Saari, G.C.; Woodbury Proc. Natl. Acad. Sci. U.S.A. 83, 2412-2416, 1986 A;Title: Characterization of a cDNA coding for human factor VII. A;Reference number: A23819; MUID:86205965; PMID:3486420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Molecule type: DNA
A; Residues: 1-466 <OHA>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                C;Date: 19-May-1989 #sequence_revision 19-May-1994 #text_change 08-Dec-2000 C;Accession: A28322; A23819; A31186; B31186; S63524 R;O'Hara, P.J.; Grant, F.J.; Haldeman, B.A.; Gray, C.L.; Insley, M.Y.; Hagen, F.S.; Proc. Natl. Acad. Sci. U.S.A. 84, 5158-5162, 1987 Proc. Natl. Acad. Sci. U.S.A. 84, 5158-5162, 1987 A;Title: Nucleotide sequence of the gene coding for human factor VII, a vitamin K-de A;Reference number: A28322; MUID:87260948; PMID:3037537 A;Accession: A28322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Molecule type: mRNA
A; Residues: 1-443 <BRO>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           coagulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              C; Accession:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                coagulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       I46932
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ;Species: Homo sapiens (man)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ANSFLEELRPGSLERECKEELCSFEEAREVFQSTERTKQFW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       factor VIIa (EC 3.4.21.21) precursor [validated] -
              proteir
```

PID:g182801

Ŧ :

factor VII.

a vitamin K-dep

R.G.;

```
A;Cross-references: GB:S56300; NID:g266294; PID:g266295 C;Superfamily: coagulation factor X; EGF homology; Gla F;24-83/Domain: Gla domain homology <GLA>F;89-120/Domain: EGF homology <EG1>F:130-166/Domain: EGF homology <EG2>
                                                                                                                                                                                                                                                                                                                                                                                                A;Title: Complete nucleotide sequence of the cDNA encoding rabbit A;Reference number: I46932; MUID:93190306; PMID:8383365 A;Accession: I46932
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                coagulation factor VII - rabbit
C;Species: Oryctolagus cuniculus (domestic rabbit)
C;Date: 04-Sep-1997 #sequence_revision 04-Sep-1997 #text_change 12-Feb-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             F:103/Modified site: erythro-beta-hydroxyaspartic acid (Asp) #status experimental F:199,211/Binding site: carbohydrate (Thr) (covalent) #status experimental F:221,231/Binding site: carbohydrate (Asn) (covalent) #status experimental F:234-335/Cleavage site: Arg-Tle (coagulation factor IXa, coagulation factor VIIa) F:276,322,419/Active site: His, Asp, Ser #status experimental
                                                                                                                                                                                                                                                                                                                                                                             A; Status: preliminary; translated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             R;Brothers, A.B.; Clarke, B.J.; Sheffield, W.P.; Blajchman, Thromb. Res. 69, 231-238, 1993
                                                                                                                                                                     F;192-425/Domain: trypsin homology <TRY>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          41 ANSFLEEMKKGHLERECMEETCSYEEAREVFEDSDKTNEFWNKY
1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFW 41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  53.8%;
                                                                                          50.8%;
                                                                  ა
••
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9;
                                                                                                                                                                                                                                                                                                                                                                             from
                                                                                          Score 101; DB 2; Pred. No. 1.8e-08;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 107; DB 1
Pred. No. 2e-09;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                             GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1; Length 488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                17;
                                                                                                                Length 443;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                        domain homology; trypsin homol
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          44
                                                                0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0
                                                                                                                                                                                                                                                                                                                                                                                                                                                     coagulation
                                                                  Gaps
                                                                0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0
                                                                                                                                                                                                                                                                                                                                                                                                                                                        factor
```

```
C;Accession: A31979; C20274

R;Takeya, H.; Kawabata, S.; Nakagawa, K.; Yamamichi, Y.; Miyata, T.; Iwanaga, J. Biol. Chem. 263, 14868-14877, 1988
A;Title: Bovine factor VII. Its purification and complete amino acid sequence. A;Reference number: A31979; MUID:89008362; PMID:3049594
A;Accession: A31979
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   F:213-46/Product: coagulation factor VIIa heavy chain #status experimental <MA2>
F:213-447/Domain: trypsin homology <TRY>
F:61,67,74,76,79,80,85,66,89,95/Modified site: gamma-carboxyglutamic acid (Glu) #status F:77-82,110-121,115-130,132-141,151-162,158-172,174-187,195-322,219-224,238-254,370-389, F:112,120/Binding site: carbohydrate (Ser) (covalent) #status experimental F:123/Modified site: erythro-beta-hydroxyaspartic acid (Asp) #status absent F:205,382/Binding site: carbohydrate (Asn) (covalent) #status experimental F:212-213/Cleavage site: Arg-Ile (coagulation factor XIIa) #status experimental F:253,302,404/Active site: His, Asp, Ser #status predicted F:350-351/Cleavage site: Arg-Gly (coagulation factor XIa) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Description: catalyzes the proteolytic activation of coagulation factor X in the prese oagulation factor IX in the presence of calcium and tissue factor A;Pathway: blood coagulation extrinsic pathway

C;Superfamily: coagulation factor X; EGF homology; Gla domain homology; trypsin homology

C;Keywords: beta-hydroxyaspartic acid; blood coagulation; calcium binding; carboxyglutam

F;1-20/Domain: signal sequence #status predicted <SIG>
                                                                                                            Biochem. Biophys. Res. Commun. 115, 8-14, 1983
A; Title: The occurrence of beta-hydroxyaspartic acid in
A; Reference number: A20274; MUID:83308813; PMID:6688526
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   F;21-60/Domain: propeptide #status predicted <PRO>
F;45-104/Domain: Gla domain homology <GLA>
F;61-212/Product: coagulation factor VIIa light chain #status experimental
F;110-141/Domain: EGF homology <EG1>
F;151-187/Domain: EGF homology <EG2>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Eur. J. Biochem. 234, 293-300, 1995
A; Title: Structurally and functionally distinct Ca(2+) binding
A; Reference number: S63524; MUID:96096752; PMID:8529655
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Residues: 61-212 <THI>
A;Accession: B31186
A;Molecule type: protein
A;Residues: 213-466 <TH2>
A;Residues: 213-466 <TH2>
T;R;Bjoern, S;; Foster, D.C.; Thim, L.; Wiberg, F.C.; Christensen, M.; Komiyama, Y.;
J. Biol. Chem. 266, 11051-11057, 1991
                                                                                                                                                                                                                     A;Molecule type: protein
A;Residues: 1-407 <TAK>
R;McMullen, B.A.; Fujikawa, K.; Kisiel,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               C;Species: Bos primigenius taurus (cattle)
C;Date: 21-May-1990 #sequence_revision 23-Mar-1995 #text_change 16-Jul-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Map position: 13q34-13q34
A; Introns: 22/1; 44/1; 97/3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Reference number: A; Accession: S63524
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Contents: annotation; carbohydrate binding sites R;Persson, E.; Petersen, L.C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Title: Human plasma and recombinant factor VII. Characterization of O-glycosylations A; Reference number: A40529; MUID:91250411; PMID:1904059
A; Molecule type: protein
A; Residues: 58-62, 'X', 64-68 < MCM>
                                                                 A; Reference number: A20274; A; Accession: C20274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               C; Function:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Cross-references: GDB:119897; OMIM:227500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Molecule type: protein
A; Residues: 61-65; 99-103; 105-109; 213-217; 308-312 <PER>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         coagulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Gene: GDB: F7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFW 41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ANAFLEELRPGSLERECKEEQCSFEEAREIFKDAERTKLFW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         factor VIIa (EC 3.4.21.21) - bovine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  49.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          106/1; 144/1; 191/1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 98; DB 1; LC
Pred. No. 5.8e-08;
'''smatches 17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              227/3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 466
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                               the vitamin K-dependent blood
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  269/1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    sites
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            gamma-carbo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ŝ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Peder
```

Qy

1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFW 41 ANGFLEELLPGSLERECREELCSFEEAHEIFRNEERTRQFW

뫄

A; Note: the residue designated 'X' was determined to be hydroxyaspartic acid R; Hase, S.; Kawabata, S.; Nishimura, H.; Takeya, H.; Sueyoshi, T.; Miyata, T.; J. Biochem. 104, 867-868, 1988
A; Title: A new trisaccharide sugar chain linked to a serine residue in bovine k A; Reference number: A44556; MUID:89213999; PMID:3149637
A; Contents: annotation A; Note: structure and location of covalently bound carbohydrate C; Function: F:153-387/Domain: trypsin homology <TRY>
F:6,7,14,16,19,20,25,26,29,34,35/Modified site: gamma-carboxyglutamic acid (Glu) #sta F:17-22,50-61,55-70,72-81,91-102,98-112,114-127,135-262,159-164,178-194,310-329,340-3 F:52/Binding site: carbohydrate (Ser) (covalent) #status experimental F:63/Modified site: erythro-beta-hydroxyaspartic acid (Asp) (partial) #status experimental F:145,203/Binding site: carbohydrate (Asn) (covalent) #status experimental F:152-153/Cleavage site: Arg-Ile (coagulation factor XIIa) #status experimental F:193,242,344/Active site: Arg-Gly (coagulation factor Xa) #status experimental A;Description: catalyzes the proteolytic activation of coagulation factor X in the proteolytic activation of coagulation factor X in the presence of calcium and tissue factor A;Pathway: blood coagulation extrinsic pathway
C;Superfamily: coagulation factor X; EGF homology; Gla domain homology; trypsin homol C;Keywords: beta-hydroxyaspartic acid; blood coagulation; calcium binding; carboxyglu E;1-152/Product; coagulation factor VIIa light chain #status experimental <MAl> F;1-44/Domain: Gla domain homology (fragment) <GLA>
F;50-81/Domain: EGF homology <EGI>
F;91-127/Domain: EGF homology <EG2>
F;91-127/Domain: EGF homology <EG2>
F;153-407/Product: coagulation factor VIIa heavy chain #status experimental Best Matches Query Match Local Similarity 42.2%; 43.9%; Pred. Score 84; Mismatches No. 9 DB 1; .8e-06; Length 407 Indels 0, bovine blood <MA2> 0 Iwanag

A;Accession. A;Accession. A;Molecule type: protein
A;Molecule type: protein
A;Residues: 44-58 <HEN>
A;Residues: 44-58 <HEN>
A;Note: the authors purified the proenzyme from the estrogen-stimulated maturing and a;Residues: A;A;Accession of the protein authors purified the proenzyme from the estrogen-stimulated maturing and A;Residues: A;A;Accession of the protein authors are protein authors and acceptance of the protein authors are protein and acceptance of the protein authors are protein authors and acceptance of the protein authors are protein authors and acceptance authors are protein at a protein authors are protein authors and acceptance authors are protein authors and acceptance authors are protein authors are protein authors and acceptance authors are protein Nucleic Acids Res. 18, 4251, 1990 A;Title: cDNA sequence of rat prothrombin. A;Reference number: S10511; MUID:90332426; C;Species: Rattus norvegicus (Norway rat)
C;Date: 07-May-1993 #sequence_revision 07-May-1993 #text_change
C;Accession: S10511; A60576; B42696 A; Reference number: A60576; MUID:90091942; PMID:2293980 A; Accession: A60576 A;Cross-references: EMBL:X52835; NID:g56969; PIDI R;Henrikson, K.P.; Jazin, E.E.; Greenwood, J.A.; Endocrinology 126, 167-175, 1990 A; Title: Prothrombin levels A; Molecule type: mRNA A; Residues: 1-617 <DIH> A; Accession: S10511 S10511 R; Dihanich, M.; Monard, D. thrombin (EC 3.4.21.5) precursor - rat are increased in the estrogen-treated PMID: 2377469 PIDN:CAA37017.1; .A.; Dickerman, H. PID:g56970 .W. 03-May-2002 immature rat uterus rat

A;Cross-references: GB:M81397 C;Superfamily: thrombin; Gla domain homology; kringle homology; C;Keywords: blood coagulation; calcium binding; carboxyglutamic F;1-24/Domain: signal sequence #status predicted <SIG>

trypsin homology acid; glycoprote

propeptide #status predicted
Gla domain homology <GLA>

A; Molecule type: mRNA A; Residues: 383-617, '

'E' <BAN>

A; Status: preliminary

```
F:25-43/Domain: propeptide #status predicted <PRO>
F:28-88/Domain: Gla domain homology <GLA>
F:44-618/Product: prothrombin B #status predicted <MAT>
F:109-187/Domain: kringle homology <KR1>
F:109-187/Domain: kringle homology <KR2>
F:215-293/Domain: kringle homology <KR2>
F:315-293/Domain: kringle homology <KR2>
F:351-510/Domain: trypsin homology <KR2>
F:351-510/Domain: trypsin homology <KR2>
F:351-610/Domain: trypsin homology <KR2>
F:351-610/D
N;Contains: prothrombin (man) C;Species: Homo sapiens (man) C;Date: 30-Nov-1980 #sequence_revision 22-Jul-1994 #text_change C;Date: 30-Nov-1980 #sequence_revision 23-Jul-1994 #text_change C;Accession: A29351; A00914; B00914; A37549; A37550; I51952
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  C:Superfamily: thrombin; Gla domain homology; kringle homology; C:Keywords: blood coagulation; calcium binding; carboxyglutamic C:Keywords: blood coagulation; calcium binding; carboxyglutamic C:F:1-24/Domain: signal sequence #status predicted <SIG>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Note: the data were obtained from females resulting from the cross of M. domest R;Banfield, D.K.; MacGillivray, R.T.A. Proc. Natl. Acad. Sci. U.S.A. 89, 2779-2783, 1992 A;Title: Partial characterization of vertebrate prothrombin cDNAs: amplification A;Reference number: A42696; MUID:92212913; PMID:1557383
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                R:Degen, S.J.F.; Schaefer, L.A.; Jamison, C.S.; Grant, S.G.; Fitzgibbon, J.J.; DNA Cell Biol. 9, 487-498, 1990
A:Title: Characterization of the cDNA coding for mouse prothrombin and localiza A:Reference number: A35827; MUID:91025551; PMID:2222810
A:Accession: A35827
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         F;109-187/Domain: kringle homology <KR1>
F;215-292/Domain: kringle homology <KR2>
F;315-292/Domain: kringle homology <TRY>
F;360-609/Domain: trypsin homology <TRY>
F;360-609/Domain: trypsin homology <TRY>
F;50,51,58,60,63,64,69,70,73,76/Modified site: gamma-carboxyglutamic acid (Glu) #status
F;61-66,91-104,109-187,130-170,158-182,215-292,236-276,264-287,332-478,387-403,532-546,5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Residues: 1-618 <DEG>
A;Cross-references: GB:X52308; NID:g53813; PIDN:CAA36548.1;
A;Experimental source: strain C57BL/6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   C;Date: 14-Dec-1990 #sequence_revision 14-Dec-1990 #text_change 03-May-2002 C;Accession: A35827; A42696; S12081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          β
                                                                                                                                                                                        N; Alternate names: coagulation
                                                                                                                                                                                             thrombin (EC 3.4.21.5) precursor [validated] - N; Alternate names: coagulation factor II
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   C; Species:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   F;402,458,564/Active site: His, Asp, Ser #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              F;403,459,565/Active site: His, Asp,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Residues: 384-618,'E' <BAN>
A;Cross-references: GB:M81394
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                F;44-617/Product: prothrombin #status experimental <PMAT>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       thrombin (EC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Molecule type: mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Molecule type: mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 ANS-FLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 ANS-FLXXLRHGSLXRXCIXXICDFXXAKXIF2DVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ANSGELEELRKGNLERECVEEQCSYEEAFEALESPQDTDVFWAKY 88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                ANSGFLEELRKGNLERECVEEQCSYEEAFEALESPQDTDVFWAKY 88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mus musculus (house mouse)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    18; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3.4.21.5) precursor - mouse
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              42.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               42.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score
Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 83.5; DB 2; Pred. No. 1.8e-05;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ser #status
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              83.5;
No. 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 617;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 618;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PID:g53814
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                trypsin homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      acid; glycoprotein;
                                                        08-Dec-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ۳
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   localization
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      domesticus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ď
```

```
A;Tille
A;Reference number
A;Accession: A00914
A;Molecule type: mRNA
A;Molecule type: mR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A:Molecule type: DNA
A:Residues: 188-311 <DE3>
A:Residues: 188-312 <DE3>
A:Residues: 188-312 <DE3>
A:Residues: 188-314 <DE3>
A:Residues: 188-31549: MUID:77193964; PMID:266717
A:Reference number: A37549; MUID:77193964; PMID:266717
A:Accession: A37549; MUID:77193964; PMID:266717
A:Residues: 44-118,'N',120,'S',122-163,'I',165-175,'A',177-182,'T',184-193,'MV',196-3
A:Residues: 44-118,'N',120,'S',122-163,'I',165-175,'A',177-182,'T',184-193,'MV',196-3
A:Rethcwski, R.J.; Elion, J.; Downing, M.R.; Mann, K.G.
J. BBO1. Chem. 252, 4942-4957, 1977
A:Title: Primary structure of human prethrombin 2 and alpha-thrombin.
A:Reference number: A37550; MUID:77207112; PMID:873923
F;328-363/Product: thrombin light chain *status experimental <LCH> F;364-622/Product: thrombin heavy chain *status experimental <HCH> F;364-613/Domain: trypsin homology <TRY> F;49,50,57,59,62,63,68,69,72,75/Modified site: gamma-carboxyglutamic acid (Glu) F;60-65,90-103,108-186,129-169,157-181,213-291,234-274,262-286/Disulfide bonds:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Map position: 11p11-11q12
A;Introns: 27/1; 80/3; 89/1; 106/1; 141/2; 187/1; 292/1; 335/1; 377/2; 433/2; 491/2;
C;Superfamily: thrombin; Gla domain homology; kringle homology; trypsin homology
C;Keywords: acute phase; blood coagulation; calcium binding; carboxyglutamic acid; du
E;1-24/Domain: signal sequence #status predicted <SIG>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Contents: annotation; activation cleavages R;MacGillivray, R.T.; Irwin, D.M.; Guinto, E.R.; Stone, J.C. R;MacGillivray, R.T.; Irwin, D.M.; Guinto, E.R.; Stone, J.C. Ann. N. Y. Acad. Sci. 485, 73-79, 1986
A;Title: Recombinant genetic approaches to functional mappin A;Reference number: 151952; MUID:87182874; PMID:3471151
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Accession: A37550
A;Accession: A37550
A;Molecule type: protein
A;Residues: 315-334,'N',350-348,'N',350-368,'N',370-397,'N',399-413,'N',415-484,'N',4
A;Residues: 315-334,'N',350-348,'N',350-368,'N',370-397,'N',399-413,'N',415-484,'N',4
R;Rabiet, M.J.; Blashill, A.; Furie, B.C.
J. Biol. Chem. 261, 13210-13215, 1986
A;Reference number: A37551; MUID:87008532; PMID:3759958
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         R;Degen, S.J.F.; Davie, E.W.
Biochemistry 26, 6165-6177, 1987
A;Title: Nucleotide sequence of the gene for human prothrombin.
A:Reference number: A29351; MUID:88077877; PMID:2825773
A;Accession: A29351
A;Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    C; Comment:
C; Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          C;Comment: The cleavage after Arg-198, observed in vitro, does not occur in p C;Comment: The gamma-carboxyglutamyl residues bind calcium ions, result from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  C;Comment: Thrombin, which cleaves bonds after Arg and Lys, converts fibrinogen C;Comment: Prothrombin is activated on the surface of a phospholipid membrane th ) can be removed either by factor Xa or thrombin; the cleavage into light and he ter 314-Arg, are released in natural blood clotting.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A; Title: Characterization of the complementary deoxyribonucleic A; Reference number: A00914; MUID:83231469; PMID:6305407
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           R; Degen, S.J.F.; MacGillivray, R
Biochemistry 22, 2087-2097, 1983
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                F;25-43/Domain: propeptide #status predicted <PRO>
F;28-87/Domain: Gla domain homology <GLA>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Molecule type: mRNA
A; Residues: 1-2, 'RI',
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Cross-references: GB:M17262; GB:M33691; NID:g558069; PIDN:AAC63054.1; PID:g339641
R;Degen, S.J.F.; MacGillivray, R.T.A.; Davie, E.W.
                                                                                                                                                                                                                                                                                                F;108-186/Domain: kringle homology <KR1>
F;213-291/Domain: kringle homology <KR2>
                                                                                                                                                                                                                                                                                                                                                                                                                           F;44-622/Product: prothrombin *status experimental <MAT> F;44-327/Domain: activation peptide *status experimental
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ent interaction with the negatively charged phospholipid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Cross-references: GB:M33031; NID:g190723; PIDN:AAA60220.1; PID:g190724
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Status: translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Accession: I51952
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Residues: 1-622 < DEG>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Cross-references:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Gene: GDB:F2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ction with the negatively charged phospholipid membrane surface. The prothrombin precursor is synthesized in the liver.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GDB:119894; OMIM:176930
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ,5-100 <RES>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       <DE2>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GB:J00307;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NID: g37128;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         functional mapping PMID:3471151
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PIDN:CAA23842.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                       <APT>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                of thrombin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PID: g1335344
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    gene coding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       in plasma.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      en to fi
that bi
heavy c
            #Stat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          carb
```

carbohydrate (Asn) (covalent)

predicted

```
В
                                                                         2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           C;Species: Gallus gallus (chicken)
C;Date: 12-Feb-1993 #sequence_revision 07-Feb-1997 #text_change 16-Jul-1999
C;Accession: S15838; S20380; S20381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        F:336-482,536-550,564-594/Disulfide bonds: #status predicted F:331-407/Disulfide bonds: #status experimental F:406,462/Active site: His, Asp #status predicted F:416/Binding site: carbohydrate (Asn) (covalent) #status exp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                뭉
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Title: Primary structure of the virus activating protease A; Reference number: S15838; MUID:91257322; PMID:2044767
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       coagulation factor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            F;568/Active site: Ser #status experimental
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Pathway: blood
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Molecule type: protein
A;Residues: 241-246,'X',248-251,'X',253-261 <GOT>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Accession: S20381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Molecule type: protein A; Residues: 41-55 <GO2>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Reference number:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Title: Isolation of factor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FEBS Lett.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Accession: S15838
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEBS Lett.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      N; Alternate names:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                N; Molecule type: mRNA
                                                                                                                                                                                                                                                                                                           ;241-468/Domain: trypsin homology <TRY>;40,47,54,56,59,60,55,66,69,72,75,79,Modified site: gamma-carboxyglutamic acid (Glu);57-62,90-101,95-110,112-121,129-136-152,154-167,175-348,247-252,267-283,396-410,137-62,90-101,95-110,112-121,129-136-132,136-162,103,Modified site: erythro-beta-hydroxyaspartic acid (Asp) #status predicted;196,207,228,285/Binding site: carbohydrate (Asn) (covalent) #status predicted;282,328,425/Active site: His, Asp, Ser #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ;Cross-references:
;Gotoh, B.; Yamauch
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ;21-40/Domain: propeptide #status predicted <PRO>;25-84/Domain: Gla domain homology <GLA>;41-185/Product: coagulation factor X light chain #status experimental <LCH>;91-121/Domain: EGF homology <EG1>;129-167/Domain: EGF homology <EG2>;129-167/Domain: EGF homology <EG2>;186-475/Product: coagulation factor X heavy chain #status predicted <HCH>;129-167/Domain: EGF homology <EG2>;186-475/Product: coagulation factor X heavy chain #status predicted <HCH>;129-167/Domain: coagulation factor X heavy chain #status pre
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Residues: 1-475 <SUZ>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Suzuki, H.; Harada, A.; Hayashi,
                                                                                                                                                                                                 Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Superfamily: coagulation factor X; EGF homology; Gla do: Keywords: beta-hydroxyaspartic acid; blood coagulation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Description:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          186-240/Domain: activation peptide #status predicted <APT>
241-475/Product: coagulation factor Xa heavy chain #status experimental <AHC>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Accession: S20380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1-20/Domain: signal sequence #status predicted
    41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            44
                                                                                                                                                                                                 Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             not compared with conceptual translation
ANSFLEEMKQGNIERECNEERCSKEEAREAFEDNEKTEEFWN 82
                                                             ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWS 42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ANTFLEEVRKGNLERECVEETCSYEEAFEALESSTATDVFWAKY 87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            296,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     283, 281-285, 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Yamauchi,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          catalyzes the proteolytic activation of prothrombin to thrombin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            274-278, 1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     coagulation
                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              virus-activating
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Xa (EC 3.4.21.6) precursor - chicken
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DDBJ:D00844; NID:g222869; PIDN:BAA00724.1;
hi, F.; Ogasawara, T.; Nagai, Y.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S20380;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ŧ.,
                                                                                                                                                                                            40.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         34.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              r Xa from chick embryo as the amniotic endoprotease responsik
MUID:92164779; PMID:1537403
                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                            Score 80;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 81; DB 1;
Pred. No. 4.7e-05;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Y.; Wada, K.; Asaka, J.; Gotoh, B.; Ogasawara,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  proteinase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                     DB 1;
                                                                                                                                                                                                 .2e-05
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      <SIG>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 #status experimental
                                                                                                                                                                                                                                 Length 475;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 622
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   domain homology; tron; calcium binding;
                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        from chick embryo.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PID:g222870
                                                                                                                                                       0.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              trypsin homologyng; carboxyglutan
                                                                                                                                                            0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      T . ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        iden
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ιď
```

Search completed: May 13, Job time : 19 secs

2003,

14:04:34

RESULT S53434

```
F:8-642/Product: plasma protein S #status predicted <MAT>
F:87-120/Domain: EGF homology <EG1>
F:177-165/Domain: EGF homology <EG2>
F:171-207/Domain: EGF homology <EG3>
F:213-248/Domain: EGF homology <EG4>
F:213-248/Domain: EGF homology <EG4>
                                      QУ
                                                                                                                                               F;281-633/Domain: Sex norman G repeat homology
                                                                                                                                                                                                                                                                                                                         C;Superfamily: plasma protein S; EGF homology; Gla domain F;1-51/Domain: Gla domain homology (fragment) <GLA> F;1-7/Domain: signal sequence (fragment) *status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                  A;Cross-references: EMBL:L31380
A;Experimental source: tissue type liver
A;Note: the source is designated as rhesus monkey
C;Genetics:
DЬ
                                                                                                                                                                                                                                                                                                                                                                      A; Gene: PROS C; Superfamily:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Title: Identification of candidate residues for interaction of A; Reference number: S53433; MUID:95134217; PMID:7832752
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                R;Greengard, J.S. Biochem. J. 305,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              C;Date: 19-Mar-1997 #sequence_revision 18-Jul-1997 #text_change 16-Jul-1999
C;Accession: S53434
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         plasma protein S precursor, vitamin K dependent - rhesus macaque (fragment)
C; Species: Macaca mulatta (rhesus macaque)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Residues:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Molecule type: mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Status: nucleic acid sequence not shown;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Accession: S53434
                                                                                    Matches
                                                                                                          Best
                                                                                                                               Query Match
                                                                                                        Local Similarity
æ
                                      1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
ANSMLEETKQGNLERECIEELCNKEEAREVFENDPETDYFYPKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1-642 <GRE>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .s.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   397-403.,
                                                                                    Conservative
                                                                                                                                                                                     EGF homology <EG3>
EGF homology <EG4>
sex hormone-binding globulin homology <SHB>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Fernandez,
                                                                                                      39.78;
34.18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         J.A.; Radtke,
                                                                                    11;
                                                                                                        Pred.
                                                                                                                            Score 79;
                                                                                    Mismatches
                                                                                                          No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              not compared with conceptual translation
                                                                                                          0.0001
                                                                                                                                                                          <LGR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         K.P.; Griffin,
                                                                                                                               DB 2;
                                                                                                                                                                                                                                                                                                                                                                    Gla domain homology; laminin G repeat
                                                                                      18;
                                                                                                                          Length 642;
51
                                                                                 Indels
                                                                                                                                                                                                                                                                                                                              <SIG>
                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              protein
                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                with C4b
                                                                                 0;
```

```
Title:
Perfect score:
Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Searched:
    Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
    BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               May 13, 2003, 14:01:08; Search time 11 Seconds (without alignments) 165.905 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query
Match Length DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      112892 seqs, 41476328 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQ1-EDITED
    SwissProt_40:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GenCore version 5.1.4_p5_4578 Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ANSFLXXLRHgSLXRXCIXX.....XXAKXIFzdVDDTLAFWSKH
    4 4 4 5 5 9 4 4 4 9 5 6 6 1 0 1 8 6 7 1 8 6 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 1 8 7 
TMG3-HUMAN
FA7, RABIT
FA10-RABIT
FA7-HUMAN
TMG4-HUMAN
TMG4-HUMAN
THRB-MOUSE
FA7-MOUSE
FA7-MOUSE
FA7-MOUSE
FA7-MOUSE
FA7-MOUSE
PATS-HUMAN
FA9-CANFA
FA9-CANFA
FA9-CANFA
FA9-CANFA
FA9-BOVIN
PATS-MOUSE
PATS-BOVIN
PATS-MOUSE
PATS-BOVIN
PATS-MOUSE
PATS-BOVIN
PATS-MOUSE
PATS-BOVIN
PATS-BOVIN
PATS-BOVIN
PATS-BOVIN
PATS-BOVIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRTC_RABIT
PRTC_PIG
PRTC_BOVIN
FA10_BOVIN
FA10_HUMAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRTC_HUMAN
PRTC_MOUSE
PRTC_RAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ħ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SUMMARIES
                        P00740
P00741
P00735
Q08761
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Q9bzd7
P98139
O19045
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Q9g1p2
P00745
P00743
                                                                                                                                                                                                                                                                                                                                                                                                                                         P08709
O14668
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   P00742
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Q28661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      P04070
2 sus scrofa
5 bos taurus
3 bos taurus
3 bos taurus
3 bos taurus
5 cryctolagus
6 cryctolagus
5 cryctolagus
6 cryctolagus
6 cryctolagus
7 crattus norv
1 mus musculu
6 cryctolagus
7 crattus norv
1 mus musculu
6 cryctolagus
7 crattus norv
1 mus musculu
8 cryctolagus
8 crattus norv
1 mus musculu
8 cryctolagus
9 canis famil
1 mus musculu
8 cryctolagus
1 mus musculu
9 cryctolagus
1 mus musculu
1 mus musculu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ) homo sapien
mus musculu
rattus norv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       oryctolagus
```

45	44	43	42	41	40	39	38	37	36	35	34
47	47	47	47	48	48	48	49	49	50	62.5	63
23.6	23.6	23.6	23.6	24.1	24.1	24.1	24.6	24.6	25.1	31.4	31.7
1367	1356	1348	1343	1298	1235	558	1363	730	501	400	202
₽	щ	Ъ	Н	Н	<u>بــر</u>	<u>_</u>	μ	\vdash	Н	H	H
VGR2_MOUSE	VGR2_HUMAN	VGR2_COTJA	VGR2_RAT	VGR3_HUMAN	CYA4_TRYBB	ALKJ_PSEOL	VGR3_MOUSE	PRIA_HAEIN	MKC1_CANAL	PRTZ_HUMAN	TMG2_HUMAN
	•										
-		P52583 coturnix cc		P35916 homo sapier			P35917 mus muscul		P43068 candida al	P22891 homo sapie	014669 homo sapier

ALIGNMENTS

		_			
R R T T T T R R R R R R T T T T T T T T	RR	RR	RRT RAARR	R R R R R R R R R R R R R R R R R R R	RESULT PRTC_HI ID P AC P AC P DT 0 DT 0 DT 1 DE V DE (DE fi
CARBOHYDRATE-LINKAGE SITE ASN-371. MEDLINE-90293094; PubMed-1694179; Miletlich J.P., Broze G.J. Jr.; "Beta protein C is not glycosylated at asparagine 329. The rate of translation may influence the frequency of usage at asparagine-X-cysteine sites.", J. Biol. Chem. 265:11397-11404(1990).	Nickerson D.A.; Nickerson D.A.; Submitted (JUN-2001) to the EMBL/GenBank/DDBJ databases. [5] SEQUENCE OF 106-461 FROM N.A. MEDLING-84272714; PubMed-6589823; Foster D.C., Davie E.W.; "Characterization of a cDNA coding for human protein C."; Proc. Natl. Acad. Sci. U.S.A. 81:4766-4770(1984).	SEQUENCE FROM N.A. MEDLINE-86120978; PubMed-3511471; Plutzky J., Hoskins J.A., Long G.L., Crabtree G.R.; "Evolution and organization of the human protein C gene."; Proc. Natl. Acad. Sci. U.S.A. 83:546-550(1986). [4] SEQUENCE FROM N.A.	SEQUENCE FROM N.A. SEQUENCE FROM N.A. SEQUENCE FROM N.A. MEDLINE-85269639; PubMed=2991859; Beckmann R.J., Schmidt R.J., Santerre R.F., Plutzky J., Crabtree G.R., Long G.L.; "The structure and evolution of a 461 amino acid human protein C "The structure and its messenger RNA, based upon the DNA sequence of cloned human liver cDNAs."; Nucleic Acids Res. 13:5233-5247(1985). [3]	Homo sapiens (Human). Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo. NCBI_TaxID=9606; [1] SEQUENCE FROM N.A. SEQUENCE FROM N.A. MEDLINE-85270390; PubMed-2991887; Foster D.C., Yoshitake S., Davie E.W.; "The nucleotide sequence of the gene for human protein C."; Proc. Natl. Acad. Sci. U.S.A. 82:4673-4677(1985).	RESULT 1 PRTC_HUMAN STANDARD; PRT; 461 AA. ID PRTC_HUMAN STANDARD; PRT; 461 AA. AC P04070; Q16001; Q15190; Q15189; DT 01-NOV-1986 (Rel. 03, Created) DT 01-NOV-1986 (Rel. 03, Last sequence update) DT 15-JUN-2002 (Rel. 41, Last annotation update) DE Vitamin-K dependent protein C precursor (EC 3.4.21.69) DE (Autoprothrombin IIA) (Anticoagulant protein C) (Blood coagulation DE factor XIV). GN PROC.

```
J.
MEDLINE=92380660;
                                                                                                   associated with two GLA d
Blood 79:1456-1465(1992).
                                                                                                                               Bovill E.G., Tor
Rainville I.R.,
                                                                                                                                                 VARIANTS ALA-62 (VERMONT-1) AND MET-76. MEDLINE=92190481; PubMed=1347706;
                                                                                                                                                                                       symptomatic
effects.";
                                                                                                                                                                                                                                                                                                                                                                                                            Subcommittee of the Scientific and Sinternational Society on Thrombosis Thromb. Haemost. 69:77-84(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                   Reitsma P.H., Poort S.R., Bernardı F., Gandriiz Sala N., Cooper D.N.;
"Protein C deficiency: a database of mutations."
          VARIANT
                                              deficiency
                                                                                                                                                                                                                                                               the
                                                                                                                                                                                                                                                                                                   MEDLINE-90098906;
                                                                                                                                                                                                                                                                                                                                                          Cortese R.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EMBO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Harris R.J., Ling V.T., Spellman M.W.
"O-linked fucose is present in the indomain of factor XII but not protein J. Biol. Chem. 267:5102-5107(1992).
                                                                        MEDLINE=92305321;
                                                                                                                                                                                                                  Reitsma P.H.,
                                                                                                                                                                                                                           MEDLINE=91329836;
                                                                                                                                                                                                                                                                                                           VARIANT TRP-211 (LONDON-1)
                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE=87204221;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   X-RAY CRYSTALLOGRAPHY (2. MEDLINE=97157472; PubMed=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        plasma factor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3D-STRUCTURE MODELING MEDLINE=94272342; Pub
                                                                                                                                                                                                                                                             "Protein C London 1:
the protein C gene ca
                                                                                                                                                                                                                                                                                                                                                                         Romeo G.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE=93190290;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mather
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE-92184750;
                                                                                                                                                                                                                                                                                                                                                Hereditary thrombophilia:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REVIEW ON
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Models of the
                                                                                                                                                                                                                                    ARIANT CYS-272
                                                        Protein
                                     missense
                                                                                                                                                                                                                                                       leic Acids
             verency caused by two mutant alleles, seense mutation.":
80:126-133(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ٩.2.£
                                                                                                                                                                                                       spectrum
                                                                                                                                                                             78:890-894(1991).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .
œ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8 A crystal structure
15:6822-6831(1996).
                                                                                                            CVermont: symptomatic ed with two GLA domain
                                                                                                                                                                                                                                                                                                                             in the
l. Acad.
                                                                                                                                                                                                                                                                                                                                                                          Hassan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PROC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Oganessyan
                                                                                                                                                                                              protein
                                                                                                                               Tomczak J.A.,
R., Long G.L.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              r activated protein C 3:588-599(1994).
                                                                                                                                                                                                                                                                                          Chitolie
                                                                                                                                                                                                                                                                                                                                                                  Vicente
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MODELING OF 175-450
2342; PubMed=8003977
Greengard J.S., Gri
                                                                                                                                                                                            Poort S.R., Allaart C.F. of genetic defects in a rotein C deficiency type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      reengard J.S., Griffin J.H
serine protease domain of
activated protein C and its
                                                                                                                                                                                                                                                                                                                             protein Sci. U.
                                                                                                                                                                                                                                                                                                                                                                          Ξ
                                                                                                                                                                                                                                                                                                                                                                        PubMed=2437584;
H.J., Staempfli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PubMed=9003757;
PubMed=1511988;
                                                                       PubMed=1611081;
                                                                                                                                                                                                                           PubMed=1868249;
                                                                                                                                                                                                                                                                                                   PubMed=2602169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PubMed=8446940;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PubMed=1544894;
                                                                                                                                                                                                                                                     1: recurrent mutation causing thrombosis."; 17:10513-10513(1989).
                                                                                                                                                                                                                                                                                                                                                                ٠
۲ ,
                                                                                                                                                                                                                                                                                                                             S C
                                                                                                                                                                                                                                                                                                                                                                Mannucci
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .
&
                                                                                                                                                                                                                                                                                          Talbot
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Hot
                                                                                                                                                                                                                 Allaart C.F.,
                                                                                                                                                                                                                                                                                                                           identification of non
gene.";
A. 84:2829-2832(1987)
                                                                                                                                        Grant B.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ANGSTROMS)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ₽.,
                                                                                                             type II pomutations
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gla-domainless
                                                                                                                                                                                                                                                                                                                                                                P.
                                                                                                                                                                                                                                                                                         s.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        M.W.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Huber
                                                                                                                                                                                                                                                                                                                                                                                                                               Standardization
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                first
                                                                                                                                                                                                                                                                                                                                                                                                                       and
                                                                                                                    II protein
                                                                                                                                                                                                                                                                                                                                                                .
3
                                                                                                                                                                                                                                                                                                                                                               Roncuzzi L.,
M., Bertina R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ი.
                                                                                                                                        Bhushan
                                                                                                                                                                                                                                                                                         Bevan
                                                                                                                                                                                            panel of 40 Dutcl
    i: heterogeneity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           OF.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       its
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gandrille
                                                                                                                                                                                                                                                                       at
                                                                                                                                                                                                                                                                                                                                                                                                                       Haemostasis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ₽.
                                             hereditary
a 5-nucleot
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           84-461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               the human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              epidermal growth
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      zymogen
                                                                                                                                                                                                                                                                                         D.,
                                                                                                                                                                                                                                                                       Arg-169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Foundling
                                              -nucleotide
                                                                                                                                       F.,
                                                                                                                                                                                                                                                                                                                                                nonsense
                                                                                                                       a
                                                                                                                                                                                                                                                                                          Kakkar V.V
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       activated
                                                                                                                                                                                                                                                                                                                                                                                                                                     For
                                                                                                                      deficiency
                                                                                                                                        Pillemer
                                                                                                                                                                                                                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                                                                                                                                                                Cianetti
l.M., Pesch
                                                                                                                                                                                                      Bertina R.M.;
Dutch familie
                                                                                                                                                                                                                                                                       (CGG-->TGG)
                                                                                                                                                                                                                                                                                                                                                                                                                               Committee
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              antithrombotic
                                                     protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Long
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        s.,
                                                                                                                                                                                                                                                                                                                                                and
                                                                                                                                                                                                                                                                                                                                                                 Peschle
                                                                                                                                                                                              and
                                             del
                                                                                                                                                                                                                                                                                                                                                                                                                                       Protein
                                                                                                                                                                                                       families
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      protein C.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                         G.L.,
                                                                                                                                                                                                                                                                                                                                                missense
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Esmon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                factor
                                             etion
                                                                                                                                                                                               founder
                                                      C
                                                                                                                                                                                                                                                                                                                                                                                                                               of
                                                                                                                                                                                                                                                                                                                                                                С.,
                                                                                                                                                                                                                                                                       'n
                                                                                                                                                                                                                                                                                                                                                                                                                                        C
                                                                                                                                                                                                        with
                                             and
                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                        S
```

```
mutation
                                                    MEDLINE=94001606; PubMed=8398832; Marchetti G., Patracchini P., Gemma Wacey A., Cooper D.N., Tuddenham E.
                                                                                                         MEDITINE-94123329; PubMed-8292730;
Tsay W., Greengard J.S., Montgomery R.R., MCF
Koerper M.A., Coughlin J., Griffin J.H.;
Koerper M.A., Coughlin J., Griffin J.H.;
"Genetic mutations in ten unrelated American
symptomatic type 1 protein C deficiency.";
Blood Coagul. Fibrinolysis 4:791-796(1993).
                               "Symptomatic type II protein mutation (Gly 381-->Ser) in t
                                                                                                                                                                                                   Blood
                                                                                                                                                                                                                                              Millar D.S., Grundy C.B., Kakkar V.V., Cooper D.N.;
                                                                                                                                                                                                                                                                                                      Blood
                                                                                                                                                                                                                                                                                                                                               MEDLINE=93271391; PubMed=8499565;
Poort S.R., Pabinger-Fasching I.,
                                                                                                                                                                                                                                                                                                                                                                                                                                    Gandrille S., Alhenc-Gelas M., Juhan-Vague I., Alach M.; "Five novel mutations located
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VARIANTS TRP-38; CYS-42; HIS-42; GLN-271
MEDLINE=93313192; PubMed=8324221;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                mutation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      deficiency: characterization by denaturing gradient
electrophoresis.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gandrille S., Vidaud Gouault-Heilman M.,
                                                                                                                                                                                                                                                                     MEDLINE=93271396; PubMed=8499568
                                                                                                                                                                                                                                                                                                                                     Bertina R.M
                                                                                                                                                                                                                                                                                                                                                                                                      Blood 82:159-168(1993)
                                                                                                                                                                                                                                                                                                                                                                                                                            gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Wada H., Deguchi K., Shirakawa S., Saito H.; "Homozygous protein C deficiency: identification mutation that causes impaired secretion of the mu J. Lab. Clin. Med. 119:682-689(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE=93250852;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Hum.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Grundy C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE=92380661;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        causing recurrent venous thr
Hum. Genet. 89:683-684(1992)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Grundy C.B.,
                                                                                                                                                                              VARIANTS R-145;
                                                                                                                                                                                                                       "A Gla domain mutation causing type 2 protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Yamamoto K., Matsushita T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=92276939;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "Two
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VARIANTS GLN-220 AND TRP-220
                                                                                                                                                                                                                                                                                                                           "Twelve novel
                                                                                                                                                                                                                                                                                                                                                                                /ARIANTS G-14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   [19]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              'A novel homozygous missense mutation
                                                                                                                                                                                                                                                                                                                                                                                                                      in patients
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          INE-93250852; PubMed-1301959; Alhenc-Gelas rille S., Vidaud M., Alach M., Alhenc-Gelas ult-Heilman M., Toulon P., Fiessinger J.N., novel mutations responsible for hereditary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   oy C.B., Schulman S., Tengborn L., Ke different missense mutations at Arg causing recurrent venous thrombosis.
                                                                                                                                                                                                                                                                                                   hereditary protein C of Coagul. Fibrinolysis
                                                                                                                                                                                                   Coagul.
 OF.
43-64
                                                                                                                                                                                                                                                                                                                                              Pabinger-Fasching
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1:491-500(1992)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              89:685-686(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Chisholm M.,
                                                                                                                                                                                                                                                                                                                           and
                                                                                                                                                                                                  Fibrinolysis 4:345-347(1993)
                                                                                                                                                                                                                                                                                                                                                                                Q-211;
                                                                                                                                                                             L-210;
                                                                                                                                                                                                                                                                                                                                                                                                                          presenting
                                                                                                                                                                                                                                                                                                                           two
FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PubMed=1593215;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PubMed=1511989;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               s.
                                                                                                                                                                                                                                                                                                                         recurrent mutations
                                                                                                                                                                                                                                                                                                                                                                                 Y-244;
                                                                                                                                                                                                                                                                                                                                                                                                                           located in
enting with
N.A.,
                                                                                                                                                                             W-211;
                                                                                                                                                                                                                      (Arg 15-->Trp)
C deficiency a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     thrombosis.";
                                                                                                                                                                                                                                                         Bignell
                                                                                                                                                                                                                                                                                                     deficiency.";
s 4:273-280(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Kakkar V.V.,
                               C deficiency caused by a missense the substrate-binding pocket.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sugiura
AND VARIANT
                                                                                                                                                                                                                                                                                                                                                                                Q-253;
                                                                  Gemmati D.,
                                                                                                                                                                             T-243; L-321;
                                          am E.G., Ber
deficiency
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaussem
                                                                                                                                                                                                                                                                                                                                                                                                                           exons III defective
                                                                                                                                                                                                                                                          .
.
                                                                                                                                                                                                                                                                                                                                               Mannhalter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ι.,
                                                                                                                                                                                                                       p) in and 1
                                                                                                                                                                                                                                                                                                                                                                                L-321;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ij
                                                                                                                                                                                                                                                          Moffat
                                                                                                                                                                                                                                                                                                                                                                                                                                                        ₽.,
                                                      Bernardi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Cooper D.N.;
in the protei
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Kakkar V.
                                                                                                                                                                                                                         recurrent
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Takamatsu J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          178
GLY-57
                                                                                                                                                                                                                                   the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AND
                                                                                                                                                                                                                                                                                                                         in
                                                               Castaman G.,
                                                                                                                                                       McPherson
                                                                                                                                                                                                                                                                                                                                                                                                                        and IX of protein C
                                                                                                                                                                                                                                                                                                                                                                                C-328;
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Aillaud
                                                                                                                                                                             M - 340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  of the
                                                                                                                                                                                                                                                                                                                                              Ċ.,
                                                                                                                                 patients
                                                                                                                                                                                                                                   protein
                                                                                                                                                                                                                                                          Е.Н.,
                                                                                                                                                                                                                                                                                                                           14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ASN-294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              protein C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               on of a mutant
                                                       H
(YONAGO).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           type I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     M., Fischer
Goossens M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           of
                                                                                                                                                                                                                                                                                                                                               Reitsma
                                                                                                                                                                             AND
                                                                                                                                                                                                                         venous
                                                                                                                                                                                                                                                                                                                                                                                I-385;
                                                                                                                                                                                                                                                                                                                                                                                                                                                          X
                                                                                                                                                                                                                                                          Martin
                                                                                                                                                       R.A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ge
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Cooper
                                                                                                                                                                                                                                    a
                                                                                                                                                                                                                                                                                                                                                                                                                          the protein C
anticoagulant
                                                                                                                                    with
                                                                                                                                                                              Y-426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               protein
                                                                Rodeghiero
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (PROC)
                                                                                                                                                                                                                                    (PROC)
                                                                                                                                                                                                                                                                                                                            families
                                                                                                                                                                                                                                                                                                                                                                                T-388
                                                                                                                                                                                                                                                          ₽.
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Dupuy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               D.N.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           missense
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A.M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gene
                                                                                                                                                                                                                                    gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (PROC)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            a
```

õ 밁

S for 'n

5

commercia:

```
RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local Similarity 72.7
Matches 32; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRTC_MOUSE STANDARD; PRT; 461 AA. p3587; O35498; O1-FEB-1994 (Rel. 28, Created) O1-FEB-1994 (Rel. 28, Last sequence update) 15-JUN-2002 (Rel. 41, Last annotation update) Vitamin-K dependent protein C precursor (EC 3.4.21.69) (Autoprothrombin IIA) (Anticoagulant protein C) (Blood
                                     This
                                                                                                                                                                                                                                                                                                                                                                               region of mammalian protein C.";
Br. J. Haematol. 86:590-600(1994).
-!- FUNCTION: PROTEIN C IS A VITAMIN K-DEPENDENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "Nucleotide structure and characte anticoagulant protein C."; Thromb. Haemost. 79:310-316(1998).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Tada
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TISSUE-Liver;
MEDLINE-92316897;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mus musculus (Mouse).
Eukaryota; Metazoa; Chordata;
Eukaryota; Metazoa; Rodentia;
Mammalla; Eutheria; Rodentia;
NCBI_TaxID=10090;
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Murakawa M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDLINE-94318474;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Jalbert L.R., Rosen Castellino F.J.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE=98152576; PubMed=9493582;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                   -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Tada N., Sato M., Tsujimura A., Iwase R., F
"Isolation and characterization of a mouse
J. Biochem. 111:491-495(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             actor XIV).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        3
                                                                                                                                                                                                                                                                                                                                                                                                                               rakawa M., Okamura T., Kamura T., Kuroiwa M., Harada comparative study of partial primary structures of
                                                       GLU RESIOUES ALLOWS THE MODIFIED PROTEIN TO BIND CALCIUM.
MISCELLANEOUS: CALCIUM ALSO BINDS, WITH STRONGER AFFINITY
ANOTHER SITE, BEYOND THE GLA DOMAIN. THIS GLA-INDEPENDENT
SITE IS NECESSARY FOR THE RECOGNITION OF THE
THROMBIN-THROMBOMODULIN COMPLEX.
SIMILARITY: BELONGS TO BEFTIDASE FAMILY S1.
SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
                                                                                                                                                                               SUBUNIT: SYNTHESIZED AS A SINGLE CHAIN PRECURSOR, WHICH IS CLEAVED INTO A LIGHT CHAIN AND A HEAVY CHAIN HELD TOGETHER BY A DISULFIDE BOND. THE ENZYME IS THEN ACTIVATED BY THROMBIN, WHICH CLEAVES A TETRADECAPEPTIDE FROM THE AMINO END OF THE HEAVY CHAIN; THIS REACTION, WHICH OCCURS AT THE SURFACE OF ENDOTHELIAL CELLS, IS STRONGLY PROMOTED BY THROMBOMODULIN.

TISSUE SPECIFICITY: PLASMA; SYNTHESIZED IN THE LIVER.

PTM: THE VITAMIN K-DEPENDENT, ENZYMATIC CARBOXYLATION OF SOME
                                                                                                                                                                                                                                                                                                  and VIIIa.
SUBUNIT: S
                                                                                                                                                                                                                                                                                                                              CATALYTIC ACTIVITY:
                                                                                                                                                                                                                                                                                                                    REGULATES BLOOD COAGULATION BY INACTIVATING FACTORS VA AND VIIIA IN THE PRESENCE OF CALCIUM IONS AND PHOSPHOLIPIDS.

CATALYTIC ACTIVITY: Degradation of blood coagulation factors Va and VIIIA.
   SWISS-PROT entry is copyright. It is produced through a collaboration een the Swiss Institute of Bioinformatics and the EMBL outstation - European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ANSFLEELRHSSLERECIEEICDFEEAKEIFQNVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ANSFLXXLRHGSLXRXCIXXICDEXXAKXIFZDVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               274-434 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                               PubMed=8043441;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PubMed=1618739;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            E.D., Lissens A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    84.9%;
72.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           characterization of the murine gene encoding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 169; DB Pred. No. 8.5e 2; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       <u>ب</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Craniata; Vertebrata; Euteleostomi; Sciurognathi; Muridae; Murinae; Mus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Iwase R., Hashimoto-Gotoh T.;
of a mouse protein C cDNA.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      169;
No. 8.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Carmeliet P., Collen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 1;
.5e-22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 461;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                        the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       coagulation
                                                                                                                                                                                                                                                                                                                                                                                                                               , Niho Y.; catalytic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0;
                                                                                                                                   BINDING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0;
                                                                                                                                                                                                                                                                                                                                                                                                                               SMART; SM00179; EGE_CA; 1.

SMART; SM00001; EGF_11ke; 1.

SMART; SM00001; EGF_11ke; 1.

SMART; SM00002; Tryp_SPc; 1.

SMART; SM00020; Tryp_SPc; 1.

PROSITE; PS00101; ASX_HYDROXYL; 1.

PROSITE; PS01186; EGF_1; 1.

PROSITE; PS01186; EGF_CA; 2.

PROSITE; PS01187; EGF_CA; 1.

PROSITE; PS00111; GLU_CARBOXYLATION; 1

PROSITE; PS00134; TRYPSIN_DOM; 1.

PROSITE; PS00134; TRYPSIN_HIS; 1.

PROSITE; PS00134; TRYPSIN_HIS; 1.
 DISULFID DISULFID DISULFID
                                                ACT_SITE
ACT_SITE
ACT_SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                               PEPTIDE
SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       entities requires or send an email t
                                                                                                                                                                                                                                                                                                                                                                                           MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SIGNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Blood
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pfam; PF00089; trypsin; 1.
Pfam; PF00594; gla; 1.
PRINTS; PR00722; CHYMOTRYPSIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMBL; D10445; BAA01235.1; -.. EMBL; AF034569; AAC33795.1; -EMBL; D43755; BAA07812.1; -..
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   modified and this
                                                                                                                                                                MOD_RES
                                                                                                                                                                                                                                MOD_RES
                                                                                                                                                                                                                                                                                              MOD_RES
                                                                                                                                                                                                                                                                                                                                MOD_RES
                                                                                                                                                                                                                                                                                                                                                              MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                               DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRINTS; PR00001; GLABLOOD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pfam; PF00008; EGF;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     InterPro: IPR000152; Asx_hydroxyl.
InterPro: IPR001314; Chymotrypsin.
InterPro: IPR000561; EGF-1ike.
InterPro: IPR001881; EGF_Ca.
InterPro: IPR002383; GLA_blood.
InterPro: IPR001254; Ser_protease_Try.
InterPro: IPR000294; VitK_dep_GLA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEROPS
                                                                                                MOD_RES
                                                                                                                                 MOD_RES
                                                                                                                                                                                                MOD_RES
                                                                                                                                                                                                                                                                MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                               DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PROPEP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EGF-like
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Samma-carboxyglutamic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HSSP; P04070;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PIR; JX0210; JX0210.
                                                                                                                                                                                                                                                                                                                                                                                                                 DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MGI:97771; Proc.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          coagulation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S01.218;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             domain;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PS00135;
   .112
.253
.299
402
58
.91
                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                60
                                                                                                                                                                                                                                                                                                57
                                                                                                                                                                                                                                                                                                                                55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAC33795.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  s a license agreement (See http://www.isb-sib.ch/announce/to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Repeat;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  statement is not a license agreeme
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TRYPSIN_SER;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Glycoprotein; Serine protease; mic acid; Calcium-binding; Vitamin K; Hydroxylation; epeat; Endothelial cell; Hydrolase; Signal.
 112
253
299
402
63
110
                                                                                                                                                                                                                                                                                                                                                                                                                               196
461
212
213
131
175
                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                              57
                                                                                                                                                                                                                                                                                                                                SS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    institutions
HYDROXYLATION (BY SIM
CHARGE RELAY SYSTEM.
CHARGE RELAY SYSTEM.
CHARGE RELAY SYSTEM.
BY SIMILARITY.
BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                         PROTEIN C LIGHT CHAIN (
PROTEIN C HEAVY CHAIN (
ACTIVATION PEPTIDE (BY
CLEAVAGE (BY THROMBIN)
EGE-LIKE 1.
                                                                                                                                                                               GAMMA-CARBOXYGLUTAMIC (BY SIMILARITY).
                                                                                                                                                                                                                                               GAMMA-CARBOXYGLUTAMIC (BY SIMILARITY).
                                                                                                                                 GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                                GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                                                              GAMMA
                                                                                                                                                                                                                                                                                                                              GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                                                                                                                              GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                                                                                                                                              GAMMA-CARBOXYGLUTAMIC (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                               EGF-LIKE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BY SIMILARITY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BY SIMILARITY.
                                                                                                                 (BY SIMILARITY)
                                                                                                                                                 (BY SIMILARITY)
                                                                                                                                                                                                                 (BY SIMILARITY)
                                                                                                                                                                                                                                                                                 (BY SIMILARITY)
                                                                                                                                                                                                                                                                                                                 (BY SIMILARITY)
                                                                                                                                                                                                                                                                                                                                                 (BY SIMILARITY)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    as long
                                                                                                                                                                -CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                                                                -CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       removed
                                                                                                                                                                                                                                                                                                                                                                                                               PROTEASE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      as
                                                                                                   (BY SIMILARITY)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      its content
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         N (BY SIMILARITY).
N (BY SIMILARITY).
N SIMILARITY).
                                                                                                                                                                ACID
                                                                                                                                                                                                                                ACID
                                                                                                                                                                                                                                                              ACID
                                                                                                                                                                                                                                                                                              ACID
                                                                                                                                                                                                                                                                                                                              ACID
                                                                                                                                                                                                                                                                                                                                                             ACID
                                                                                                                                                                                                                                                                                                                                                                                             ACID
                                                                                                                                                                                                ACID
                                                                                                                                   ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                             (BY SIMILARITY)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     γģ
```

```
Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local S
Matches 26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRIC.....
P31394;
01-JUL-1993 (Rel. 26, Created)
01-JUL-1993 (Rel. 26, Last sequence update)
15-JUN-2002 (Rel. 41, Last annotation update)
Vitamin-K dependent protein C precursor (EC 3.4.21.69)
'*" toprothrombin IIA) (Anticoagulant protein C) (Blood coagulation
                                  between
the Euro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DISULFID
CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LT 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CONFLICT
                                                                        This
                                                                                                                                                        -!- CATALYTIC ACTIVITY: Degradation of blood coagulation factors value and viila.

-is subunit: Symbunit: 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Okafuji T., Maekawa K., Nawa K., Marumoto Y.; "The cDNA cloning and mRNA expression of rat protein Biochim. Biophys. Acta 1131:329-332(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE=92329550; PubMed=1627650;
Okafuji T., Maekawa K., Nawa K.,
                                                                                                                                                                                                                                                                                                                                                                       ÷
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STRAIN=Wistar;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Rattus norvegicus (Rat).
Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Rodentia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NCBI_TaxID=10116;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIF2DVDDTLAFWSKH
               ween the Swiss Institute of Bioinformatics Institute, by non-profit institute.
                                                                                                          SIMILARITY:
SIMILARITY:
                                                                                                                                              THROMBIN-THROMBOMODULIN COMPLEX.
                                                                                                                                                                                                                                                                                                                                                                                                                         FUNCTION: PROTEIN C IS A VITAMIN K-DEPENDENT SERINE REGULATES BLOOD COAGULATION BY INACTIVATING FACTORS IN THE PRESENCE OF CALCIUM IONS AND PHOSPHOLIPIDS
                                                 SWISS-PROT entry is copyright. It is produced through en the Swiss Institute of Bioinformatics and the EM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ANSFLEEMRPGSLERECMEEICDFEEAQEIFQNVEDTLAFWIKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         104
121
139
146
161
161
182
238
373
373
398
214
290
355
328
328
393
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TISSUE=Liver;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AA;
                                                                                                        BELONGS TO PEPTIDASE FAMILY CONTAINS 2 EGF-LIKE DOMAINS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             119
130
150
159
174
174
2174
2214
325
325
325
325
325
               institutions as long
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          51945
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     70.4%;
59.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BY SIMILARITY.
BY SIMILARITY.
BY SIMILARITY.
BY SIMILARITY.
BY SIMILARITY.
INTERCHAIN (BY SIMILARITY.
INTERCHAIN (BY SIMILARITY.
BY SIMILARITY.
BY SIMILARITY.
BY SIMILARITY.
BY SIMILARITY.
N-LINKED (GLCNAC.
N-LINKED (GLCNAC.
N-LINKED (GLCNAC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pred. No. 1.1e7; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MISSING (IN REF. 2)
N -> D (IN REF. 2)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 140;
Pred. No. 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Craniata; Veri
Sciurognathi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRT;
 not removed.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         53FAA0D85B194D6E CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  461
               ormatics and the EMBL outs
There are no restrictions
ong as its content is in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Vertebrata; Euteleostomi;
thi; Muridae; Murinae; Rat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 1;
.1e-16;
                                                                                                                           S1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SIMILARITY).
Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 461;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (POTENTIAL)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   c
 and for
                                                                                                                                                                                                                                                                                                                                                                                                                                            PROTEASE THAT
                                             EMBL outstation
             15
                                                                  a collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Rattus
                                                                                                                                                                                                                                                                                                                                                                     CLEAVED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                 no
no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0;
```

```
FT
                                                                                                                                                                                                                                                                  PROSITE: PS00010; ASX_HYDROXYL; 1.
PROSITE: PS00022; EGF_1; 1.
PROSITE: PS01186; EGF_2; 2.
PROSITE: PS01187; EGF_CA; 1.
PROSITE: PS00011; GLU_CARBOXYLATION; 1
PROSITE: PS50240; TRYPSIN_DOM; 1.
PROSITE: PS500134; TRYPSIN_HIS; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRINTS; PRO0722; CHYMOTRYPSIN.
PRINTS; PRO0001; GLABLOOD.
SMART; SM00179; EGF_CA; 1.
SMART; SM00001; EGF_Like; 1.
SMART; SM00069; GLA; 1.
SMART; SM00020; Tryp_SPc; 1.
 DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
                                                                                 ACT_SITE
                                                                                                       MOD_RES
                                                                                                                                                                    MOD_RES
                                                                                                                                                                                                                                                                                                                                          SITE
                                                                                                                                                                                                                                                                                                                                                                        CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pfam; PF00089; trypsin; 1.
Pfam; PF00594; gla; 1.
PRINTS; PR00722; CHYMOTRYP;
PRINTS; PR00001; GLABLOOD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           InterPro;
InterPro;
                                                                          ACT_SITE
                                                                                                                            MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                  MOD_RES
                                                                                                                                                                                         MOD_RES
                                                                                                                                                                                                              MOD_RES
                                                                                                                                                                                                                                   MOD_RES
                                                                                                                                                                                                                                                       MOD_RES
                                                                                                                                                                                                                                                                            MOD_RES
                                                                                                                                                                                                                                                                                                 MOD_RES
                                                                                                                                                                                                                                                                                                            DOMAIN
                                                                                                                                                                                                                                                                                                                      DOMAIN
                                                                                                                                                                                                                                                                                                                                 DOMAIN
                                                                                                                                                                                                                                                                                                                                                     PEPTIDE
                                                                                                                                                                                                                                                                                                                                                                                   PROPEP
                                                                                                                                                                                                                                                                                                                                                                                             SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                        EGF-like
                                                                                                                                                                                                                                                                                                                                                                                                                 Gamma-carboxyglutamic
                                                                                                                                                                                                                                                                                                                                                                                                                          Blood coagulation;
                                                                                                                                                                                                                                                                                                                                                                                                                                      PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Pfam; PF00008;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEROPS; S01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            $18994; $18994.
$24312; $24312.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     P04070;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  X64336;
                                                                                                                                                                                                                                                                                                                                                                                                                                  PS50240; TRYPSIN_DOM; 1.
PS00134; TRYPSIN_HIS; 1.
PS00135; TRYPSIN_SER; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IPR000152;
IPR001314;
IPR000561;
IPR001881;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  IPR001254; Ser_protease_Try.
IPR000294; VitK_dep_GLA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IPR002383;
  112
254
300
402
58
91
100
104
121
139
                                                                                                                                                  67
                                                                                                                                                                       66
                                                                                                                                                                                         61
                                                                                                                                                                                                              60
                                                                                                                                                                                                                                   57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CAA45617.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EGF;
                                                                                                                                                                                                                                                                                                                                                                                            Repeat;
                                                                                                                                                                                                                                                                                                                                                                                                               Glycoprotein; Serine mic acid; Calcium-bind
 112
254
300
402
63
110
105
119
130
150
                                                                                                                             70
                                                                                                                                                  67
                                                                                                                                                                       66
                                                                                                                                                                                         61
                                                                                                                                                                                                              60
                                                                                                                                                                                                                                                                           48
                                                                                                                                                                                                                                   57
                                                                                                                                                                                                                                                       55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Asx_hydroxyl.
Chymotrypsin.
EGF-like.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EGF_Ca.
GLA_blood.
                                                                                                                                                                                                                                                                                                                                                                                                   protein; Serine protease;
id; Calcium-binding; Vitamin K; Hydroxylation;
Endothelial cell; Hydrolase; Signal
(BY SIMILARITY).

HYDROXYLATION (B CHARGE RELAY SYS CHARGE RELAY SYS SYMILARITY.

BY SIMILARITY.

BY SIMILARITY.
                                                                                                                                                GAMMA-CARBOXYGLUTAMIC (BY SIMILARITY).
GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                        GAMMA-CARBOXYGLUTAMIC (BY SIMILARITY).
GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                        GAMMA-CARBOXYGLUTAMIC
(BY SIMILARITY).
GAMMA-CARBOXYGLUTAMIC
(BY SIMILARITY).
                                                                                                                                                                                                                                                                (BY SIMILARITY).
GAMMA-CARBOXYGLUTAMIC
(BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                       PROTEIN C LIGHT CHAIN (
PROTEIN C HEAVY CHAIN (
ACTIVATION PEPTIDE (BY
CLEAVAGE (BY THROMBIN)
                                                                                                                            GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                                                                GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                                                                                     EGF-LIKE 1.
                                                                                                                                                                                                                                                                                                                                                                                   BY SIMILARITY
                                                                                                                                      (BY SIMILARITY)
                                                                                                                                                                               (BY SIMILARITY)
                                                                                                                                                                                                                                                                                                            SERINE PROTEASE
                                                                                                                                                                                                                                                                                                                                                                                             SIMILARITY.
                                                                          RELAY SYSTEM
                                                                                 SYSTEM
                                                                                                        (BY SIMILARITY)
                                                                                                                            ACID
                                                                                                                                                 ACID
                                                                                                                                                                                         ACID
                                                                                                                                                                                                                                   ACID
                                                                                                                                                                                                                                                       ACID
                                                                                                                                                                                                                                                                            ACID
                                                                                                                                                                                                                                                                                                 ACID
                                                                                                                                                                    ACID
                                                                                                                                                                                                              ACID
                                                                                                                                                                                                                                                                                                                                                    (BY SIMILARITY).
(BY SIMILARITY).
7 SIMILARITY).
                                                                                                                                                                                                                                                                                                                                         (BY SIMILARITY).
```

```
망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Submitted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Q28661;
15-DEC-1998 (Rel. 37, C
15-DEC-1998 (Rel. 37, I
15-JUN-2002 (Rel. 41, I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CARBOHYD
CARBOHYD
CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DISULFID
DISULFID
DISULFID
DISULFID
                                                                                                                                  entitles or send a
                                                                                                                                                                                                                                                                                                                                                         INTO A LIGHT CHAIN AND A HEAVY CHAIN PRECURSOR, WHICH IS CLEAVED INTO A LIGHT CHAIN AND A HEAVY CHAIN IN THE BY A DISULFIDE BOND. THE ENZYME IS THEN ACTIVATED BY THROMBIN, WHICH CLEAVES A TETRADECAPEPTIDE FROM THE AMINO END OF THE HEAVY CHAIN; THIS REACTION, WHICH OCCURS AT THE SURFACE OF ENDOTHELIAL CELLS, IS STRONGLY PROMOTED BY THROMBOMODULIN.

"IT ISSUE SPECIFICITY: PLASMA; SYNTHESIZED IN THE LIVER."

"IF WITHEN IN THE VITAMIN K-DEPENDENT; ENZYMATIC CARBOXYLATION OF SOME GLU RESIDUES ALLOWS THE MODIFIED PROTEIN TO BIND CALCIUM.

"IMISCELLANEOUS: CALCIUM ALSO BINDS, WITH STRONGER AFFINITY TO ANOTHER SITE, BEYOND THE GLA DOMAIN. THIS GLA-INDEPENDENT BINDING SITE IS NECESSARY FOR THE RECOGNITION OF THE STATINGE FOR THE RECOGNITION OF THE
                                          EMBL; U49933; AAA92956.1;
HSSP; P04070; 1PCU.
MEROPS; S01.218; -
                                                                                                                                                                               use by non-profit institutions a modified and this statement is not
                                                                                                                                                                                                                            the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TISSUE-Liver;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NCBI_TaxID=9986;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Oryctolagus cuniculus (Rabbit).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Eu
Mammalia; Eutheria; Lagomorpha; Leporidae; Oryctolagus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             15-DEC-1998 (Rel. 37, Last sequence update)
15-JUN-2002 (Rel. 41, Last annotation update)
Vitamin-K dependent protein C precursor (EC 3.4.21.69)
(Autoprothrombin IIA) (Anticoagulant protein C) (Blood
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRTC_RABIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RABIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               factor XIV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    n L., He X., Dahlback B.;

mitted (FEB-1996) to the EMBL/GenBank/DDBJ databases.

FUNCTION: PROTEIN C IS A VITAMIN K-DEPENDENT SERINE PROTEASE THAT

REGULATES BLOOD COAGULATION BY INACTIVATING FACTORS VA AND VIIIA

IN THE PRESENCE OF CALCIUM IONS AND PHOSPHOLIPIDS.

CATALYTIC ACTIVITY: Degradation of blood coagulation factors Va
                                                                                                                                                                                                                                                                                                                 SIMILARITY: BELONGS TO PEPTIDASE FAMILY SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS
                                                                                                                                                                                                                            European
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      and VIIIa.
                                                                                                                                                                                                                                            SWISS-PROT entry is copyright. It is produced through a collaboration en the Swiss Institute of Bioinformatics and the EMBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ANSFLEEVRAGSLERECMEEICDFEEAQEIFQNVEDTLAFWIKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  26; Conser
                                                                                                                 an email to license@isb-sib.ch).
                                                                                                                                                         requires a
  IPR000152;
IPR000561;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     161
182
239
373
398
215
291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (Fragment).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                               Bioinformatics Institute. The profit institutions as long
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ş,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  174
320
255
387
426
215
291
                                                                                                                                                       license agreement (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          51912
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   69.8%;
59.1%;
Asx_hydroxyl
EGF-like.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ™
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BY SIMILARITY.
INTERCHAIN (BY SIMILARITY).
BY SIMILARITY.
BY SIMILARITY.
BY SIMILARITY.
(BY SIMILARITY.
(BY SIMILARITY.
(BY SIMILARITY.
(BY SIMILARITY.
(POT N-LINKED (GLCNAC. . .) (POT N-LINKED (GLCNAC. . .) (POT N-LINKED (GLCNAC. . .) (POT M-LINKED (GLC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                7; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 139; DB 1;
Pred. No. 1.6e-16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRT;
                                                                                                                                                                                   removed.
                                                                                                                                                                                               There are no restrictions ong as its content is in
                                                                                                                                                                                                                                                                                                                                           S1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                11;
                                                                                                                                                                               Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 461;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ) (POTENTIAL).
) (POTENTIAL).
                                                                                                                                                                               bу
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  coagulation
                                                                                                                                                                                 and
                                                                                                                                                                               for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CLEAVED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                            9
                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
```

```
Interpro; IPR000294; VILK_Gep_GLA.

Pfam; PF00008; EGF; 2.

Pfam; PF00089; trypsin; 1.

Pfam; PF00594; 9la; 1.

SMART; SM00181; EGF; 2.

SMART; SM00069; GLA; 1.

SMART; SM000020; Tryp_SPc; 1.

PROSITE; PS00010; ASX_HYDROXYL; 1.

PROSITE; PS00010; ASX_HYDROXYL; 1.

PROSITE; PS01186; EGF_2; 2.

PROSITE; PS01187; EGF_CA; 1.

PROSITE; PS01240; TRYPSIN_DOM; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PROSITE; PS00010; F
PROSITE; PS00022; F
PROSITE; PS01186; F
PROSITE; PS01187; F
PROSITE; PS00011; C
PROSITE; PS00240; C
PROSITE; PS00134; C
PROSITE; PS00135; PROSITE; PS00135
   CARBOHYD
CARBOHYD
CARBOHYD
SEQUENCE
                                                                   DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
                                                                                                                                                                                                                                                       MOD_RES
ACT_SITE
ACT_SITE
ACT_SITE
DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NON_TER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CHAIN
CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DOMAIN
DOMAIN
                                                                                                                                                                                        DISULFID
                                                                                                                                                                                                        DISULFID
                                                                                                                                                                                                                       DISULFID
                                                                                                                                                                                                                                         DISULFIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EGF-like
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gamma-carboxyglutamic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BLood
                                                                                                                                                                                                                                                                                                                                                       MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                        MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                       MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                          MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PEPTIDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PROPEP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              coagulation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               doma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IPR001881;
IPR001254;
     116
134
141
156
177
235
370
395
133
287
352
458 /
                                                                                                                                                                                                      107
250
296
399
53
86
95
99
                                                                                                                                                                                                                                                                                                                                                         65
                                                                                                                                                                                                                                                                                                                                                                                          62
                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            50
     AA;
145
169
316
251
384
423
423
133
287
352
51087
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Repeat;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TRYPSIN_SER;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TRYPSIN_HIS;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Glycoprotein; Serine protease;
mic acid; Calcium-binding; Vitamin K; Hydroxylation;
epeat; Endothelial cell; Hydrolase; Signal.
                                                                                                                                                                                                                                                                      107
250
296
399
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          27
36
458
192
192
209
210
126
170
                                                                                                                                                                                                                      58
105
                                                                                                                                                                                                                                                                                                                                                         65
                                                                                                                                                                                                                                                                                                                                                                                          62
                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EGF_Ca.
Ser_protease_Try.
VitK_dep_GLA.
     MW.
                                                               HYDROXYLATION (BY SIMILARITY).
CHARGE RELAY SYSTEM.
CHARGE RELAY SYSTEM.
CHARGE RELAY SYSTEM.
BY SIMILARITY.
   N-LINKED (GLCNAC...
N-LINKED (GLCNAC...
N-LINKED (GLCNAC...
D75A5F990C8F29D7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BY SIMILARITY.

BY SIMILARITY.

VITAMIN K-DEPENDENT PROTEIN C.

PROTEIN C LIGHT CHAIN (BY SIMILARITY).

PROTEIN C HEAVY CHAIN (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                         GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                                                                                                                                         GAMMA-CARBOXYGLUTAMIC (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                         GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                                                                                                                                                                                                          GAMMA-CARBOXYGLUTAMIC (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GAMMA-CARBOXYGLUTAMIC (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GAMMA-CARBOXYGLUTAMIC (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SERINE PROTEASE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACTIVATION PEPTIDE (BY SIMILARITY) CLEAVAGE (BY THROMBIN) (BY SIMILARI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EGF-LIKE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (BY SIMILARITY)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (BY SIMILARITY)
                                                                                                                                                                                                                                                                                                                                         (BY SIMILARITY)
                                                                                                                                                                                                                                                                                                                                                                                                      (BY SIMILARITY)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (BY SIMILARITY)
                                                                                                                                                                                                                                                                                                                                                         ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACID
                                                                                                                                                                                                                                                                                                                                                                                        ACID
                                                                                                                                                                                                                                                                                                                                                                                                                         ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACID
                   (POTENTIAL).
(POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (BY SIMILARITY).
```

Query Match Best Local Matches

26; Conser

Conservative

69.3%; 59.1%;

Score 138; DB Pred. No. 2.4e 4; Mismatches

DB 1; .4e-16;

Length 458; Indels

0

Gaps

ρy

ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH

44

```
RESULT
PRTC_P1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Q9GLP2;
16-OCT-2001 (Rel. 4
16-OCT-2001 (Rel. 4
15-JUN-2002 (Rel. 4
Vitamin-K dependent
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LT 5
                                                                                                                                                                                                                                         between
the Euro
  Pfam;
Pfam;
                                                                                                                                     MEROPS;
                                                                                                                                                                                     or send
                                                                                                                                                                                                   entities
                                                                                                                                                                                                                modified
                                                                                                                                                                                                                                                                                                                                                             ÷
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ÷
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   protein modeling
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Grimm D.R.,
Kim H.K.W.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE=21121490;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NCBI_TaxID=9823;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 sus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 "Porcine factor V:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     15-JUN-2002 (Rel. 41, Vitamin-K dependent poor (Autoprothrombin IIA)
                                                      InterPro;
                                                                    InterPro;
                                                                                            InterPro;
                                                                                                          InterPro;
                                                                                                                      InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         factor XIV).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   37
                                                                                                                                                                                                                                                                                                                                           strongly promoted by thrombomodulin.
TISSUE SPECIFICITY: Plasma; synthesized in the liver.
PTM: The vitamin K-dependent, enzymatic carboxylation of s
residues allows the modified protein to bind calcium.
MISCELLANEOUS: Calcium also binds, with stronger affinity
another site, beyond the GLA domain. This GLA-independent
                                                                                                                                                                                                                                      SWISS-PROT entry is copyright. It is produced through a collaboration ween the Swiss Institute of Bioinformatics and the EMBL outstation - European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                                                                                                                       SIMILARITY: BELONGS TO PEPTIDASE FAMILY SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
                                                                                                                                                                                                                                                                                                                                                                                                                        SUBUNIT: Synthesized as a single chain precursor, which is cleaved into a light chain and a heavy chain held together by a disulfix bond. The enzyme is then activated by thrombin, which cleaves a tetradecapeptide from the amino end of the heavy chain; this reaction, which occurs at the surface of endothelial cells, is
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FUNCTION: Protein C is a vitamin K-dependent serine protease that regulates blood coagulation by inactivating factors Va and VIIIa in the presence of calcium ions and phospholipids.

CATALYTIC ACTIVITY: Degradation of blood coagulation factors Va
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             scrofa (Pig)
                                                                                                                                                                                                                                                                                                      thrombin-thrombomodulin complex.
SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1.
                                                                                                                                                                                                                                                                                                                                   site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           and VIIIa.
                                                                                                                                                AF191307;
P04070; 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ANSFLEELRPSSLERECVEEVCDLEEAKEIFQSVDDTLAFWYKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mol. Life Sci. 58:148-159(2001)
                                                                                                                                    S01.218;
                                                                                                                                                                                      an email to
                                                                                                                                                                                     non-profit institutions as long and this statement is not removed. requires a license agreement (See lan email to license@isb-sib.ch).
                                                                 IPR001314;
IPR000561;
IPR001881;
IPR002383;
                                                                                                                                                                                                                                                                                                                                is necessary for the recognition of
                                        IPR001254;
IPR000294;
                                                                                                                      IPR000152;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Colter M.B.,
                                                                                                                                              1PCU.
; EGF; 2.
; trypsin; 1.
gla; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STANDARD;
                                                                                                                                                              AAG28380.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     o f
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PubMed=11229814;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        40,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  cDNA cloning, gene
f membrane binding
                                                                Chymotrypsin.; EGF-like.; EGF_Ca.; GLA_blood.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Chordata; Craniata; Vertebrata; Cetartiodactyla; Suina; Suidae;

    Created)
    Last sequence update)
    Last annotation update)
    protein C precursor (EC 3)

                                       Ser_protease_Try:
VitK_dep_GLA.
                                                                                                                     Asx_hydroxyl.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (Anticoagulant protein C)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Braunschweig
                                                                                                                                                              .•
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  mapping, sites and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     sites
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        M., Alexander L.J.,
                                                                                                                                                                                                                           There are no rest
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AA
                                                                                                                                                                                                 http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                   the
                                                                                                                                                                                                               Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   comparative anatomy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              three-dimensional
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (Blood
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   .21.69)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  80
                                                                                                                                                                                                               γď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Euteleostomi;
Sus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    coagulation
                                                                                                                                                                                                                and
                                                                                                                                                                                                                                                                                                                                                                                    of some
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Neame
                                                                                                                                                                                                              for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 is cleaved disulfide
                                                                                                                                                                                                                                                                                                                                             to
binding
                                                                                                                                                                                                                           'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Р.J.,
                                                                                                                                                                                                               commercia
                                                                                                                                                                                                                                                                                                                                                                                    Glu
                                                                                                                                                                                                                             no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   of
```

```
JR PRINTS; PR00722; CH.

DR PRINTS; PR00701; EGE; BL.

DR SMART; SM00101; EGF_like; 2.

DR SMART; SM00001; EGF_like; 2.

DR SMART; SM00000; Tryp_SPC; 1.

PROSITE; PS00010; ASX_HYDROXYL; 1.

"TE; PS00110; EGF_1; 1.

"00111; EGF_2; 2.

"00011; GLU_CARBOXYLATION; 1.

"AU; TRYPSIN_SER; 1.

"COPPORTED:

"1; Cal'

"1; Cal'
                                                          Query Match
Best Local S
Matches 23
                                         CARBOHYD
CARBOHYD
                                                          DISULFID CARBOHYD
                                                                          DISULFID DISULFID
                                                                                           DISULFID
DISULFID
DISULFID
DISULFID
                                                                                                                                             DISULFID DISULFID
                                                                                                                                                                      MOD_RES
ACT_SITE
ACT_SITE
ACT_SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                       CHAIN
CHAIN
                                                                                                                                                                                                                                                                                                                                                                                               SITE
                                                                                                                             DISULFID
                                                                                                                                      DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                        CHAIN
                                                                                                                                                                                                                MOD_RES
                                                                                                                                                                                                                                MOD_RES
                                                                                                                                                                                                                                                MOD_RES
                                                                                                                                                                                                                                                                 MOD_RES
                                                                                                                                                                                                                                                                                 MOD_RES
                                                                                                                                                                                                                                                                                                  MOD_RES
                                                                                                                                                                                                                                                                                                                   MOD_RES
                                                                                                                                                                                                                                                                                                                                    MOD_RES
                                                                                                                                                                                                                                                                                                                                                    MOD_RES
                                                                                                                                                                                                                                                                                                                                                             DOMAIN
                                                                                                                                                                                                                                                                                                                                                                       DOMAIN
                                                                                                                                                                                                                                                                                                                                                                              DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                       PEPTIDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EGF-like
                                                                                                                                                                                                                                                                                                                                                                                                                                                        PROPEP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       domain;
                                                                           112
255
301
400
58
91
100
104
121
139
146
161
182
240
                                                                                                                                                                                                                                                                                                                                                                      96
135
                                                                                                                                                                                                                                                                                                                                                                                                                        199
                                                                                                                                                                                                                                67
                                                                                                                                                                                                                                                 66
                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                  60
                                                                                                                                                                                                                                                                                                   57
                                                                                                                                                                                                                                                                                                                    55
                                                                                                                                                                                                                                                                                                                                                                                                                                        42
42
                                AA;
                              Repeat;
                                                                                                                                                                                                                                                                                                                                                              131
175
459
                                                                                                                                                                                                                                                                                                                                                                                                                        459
                                                                                                                                                                                                                                                                                                                                                                                              213
214
                                                                                                                                                                                                                                                                                                                                                                                                                                        459
196
                                                                                                                                                                                                                                67
                                                                                                                                                                                                                                                 66
                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                 60
                                                                                                                                                                                                                                                                                                  57
                                                                                                                                                                                                                                                                                                                    55
        61.8%;
52.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Endothelial cell; Hydrolase;
                                 ₩;
                               BY SIMILARITY.
BY SIMILARITY.
BY SIMILARITY.
N-LINKED (GLCNAC..
N-LINKED (GLCNAC..
N-LINKED (GLCNAC..
N-LINKED (GLCNAC...
W; 8541AAC14CC16D09 (
                                                                                          CHARGE RELAY SYSTEM.
CHARGE RELAY SYSTEM.
CHARGE RELAY SYSTEM.
BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Calcium-binding; Vitamin
        Score 123; DB 1
Pred. No. 1e-13;
                                                                                                                                                                                                HYDROXYLATION (BY SIMILARITY)
                                                                                                                                                                                                        SIMILARITY)
                                                                                                                                                                                                                GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                        SIMILARITY
                                                                                                                                                                                                                                GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                                        SIMILARITY)
                                                                                                                                                                                                                                                GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                         SIMILARITY)
                                                                                                                                                                                                                                                                 GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                                         SIMILARITY
                                                                                                                                                                                                                                                                                  GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                                                           SIMILARITY)
                                                                                                                                                                                                                                                                                                   GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                                                                            SIMILARITY)
                                                                                                                                                                                                                                                                                                                   SIMILARITY).
GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                                                                                                    GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                                                                                                             SIMILARITY
                                                                                                                                                                                                                                                                                                                                                     GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                                                                                                                             SERINE PROTEASE
                                                                                                                                                                                                                                                                                                                                                                                     SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                               CLEAVAGE (BY
                                                                                                                                                                                                                                                                                                                                                                                                                SIMILARITY)
                                                                                                                                                                                                                                                                                                                                                                                                                        PROTEIN C
                                                                                                                                                                                                                                                                                                                                                                                                                                       VITAMIN K-DEPENDENT PI
PROTEIN C LIGHT CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                               BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                       EGF-LIKE
                                                                                                                                                                                                                                                                                                                                                                                                       ACTIVATION
                                                                                                                                                                                                                                                                                                                                                                                                                       HEAVY CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                      PEPTIDE (BY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        protease;
                                                                                                                                                                                                                                                                                                                                                                                               THROMBIN)
                1;
                                                                                            SIMILARITY).
                                           . . .
                                 CRC64;
               Length 459
                                                                                                                                                                                                                                                                                                                                                                                                                                       PROTEIN
                                                                                                                                                                                                                ACID
                                        ) (POTENTIAL).
) (POTENTIAL).
(POTENTIAL).
                                                                                                                                                                                                                                                ACID
                                                                                                                                                                                                                                                                 ACID
                                                                                                                                                                                                                                                                                                  ACID
                                                                                                                                                                                                                                                                                                                   ACID
                                                                                                                                                                                                                                                                                                                                    ACID
                                                                                                                                                                                                                                ACID
                                                                                                                                                                                                                                                                                 ACID
                                                                                                                                                                                                                                                                                                                                                                                                                       (BY
                                                                                                                                                                                                                                                                                                                                                      ACID
                                                                                                                                                                                                                                                                                                                                                                                                       SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                               (BY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ×..
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       <; Hydroxylation;
Signal.</pre>
                                                                                                                                                                                                                (BY
                                                                                                                                                                                                                                                (BY
                                                                                                                                                                                                                                                                (BY
                                                                                                                                                                                                                                                                                 (BY
                                                                                                                                                                                                                                                                                                  (BY
                                                                                                                                                                                                                                                                                                                   (BY
                                                                                                                                                                                                                                                                                                                                    (BY
                                                                                                                                                                                                                                (BY
```

Similarity .

Conservative

Mismatches

14;

Indels

0

Gaps

á

ب

ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRIC_BOVIN

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A.
SEQUENCE FROM N.A.
MEDLINE-85014826; PubMed=6091100;
Long G.L., Balagaje R.M., McGillivray R.T.A.;
"Cloning and sequencing of liver cDNA coding for bovine national sequencing of liver and sequencing of liver in the sequence in the sequen
                                                                                                                                                                                                                                                                                                                                   Johnson A.E., Esmon N.L., Laue T.M., Esmon C.T.;

"Structural changes required for activation of protein C by Ca2+ binding to a high affinity site that does not color carboxyglutamic acid.";

J. Biol. Chem. 258:5554-5560(1983).

-I. FUNCTION: PROTEIN C IS A VITAMIN K-DEPENDENT SERINE I REGULATES BLOOD COAGULATION BY INACTIVATING FACTORS IN THE PRESENCE OF CALCIUM IONS AND PHOSPHOLIPIDS.

-I. CATALTTIC ACTIVITY: Degradation of blood coagulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              J. Biol.
[3]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Stenflo J., Fernlund P.; "Amino acid sequence of the heavy cha J. Biol. Chem. 257:12180-12190(1982).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Drakenberg T., Fernlund P., Roepstorff P., Stenflo J.; "Beta-hydroxyaspartic acid in vitamin K-dependent protein Proc. Natl. Acad. Sci. U.S.A. 80:1802-1806(1983).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Fernlund P., Stenflo J.; "Amino acid sequence of the light chain J. Biol. Chem. 257:12170-12179(1982).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           domainless protein C.";
J. Biol. Chem. 258:5548-5553(1983).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE OF 197-456.
MEDLINE=83007326; PubMed=6896877;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE=83213514; PubMed=6406503;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "Proteolytic formation and properties of gamma-carboxyglutamic acid-
domainless protein C.":
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Esmon N.L., Debault L.E.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WEDLINE=83213513; PubMed=6304092
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PROCESSING, AND CALCIUM-BINDING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE=83169769; PubMed=6572939;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REVISION TO 110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE-83007325;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE OF 40-194.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NCBI_TaxID=9913;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Bovidae; Bovinae; Bos.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bos taurus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2
AND VIIIA.

SUBUNIT: SYNTHESIZED AS A SINGLE CHAIN PRECURSOR, WHICH IS CLEAVEE INTO A LIGHT CHAIN AND A HEAVY CHAIN HELD TOGETHER BY A DISULFIDE BOND. THE ENZYME IS THEN ACTIVATED BY THROMBIN, WHICH CLEAVES A TETRADECAPEPTIDE FROM THE AMINO END OF THE HEAVY CHAIN; THIS REACTION, WHICH OCCURS AT THE SURFACE OF ENDOTHELIAL CELLS, IS STRONGLY PROMOTED BY THROMBOMODULIN.

TISSUE SPECIFICITY: PLASMA; SYNTHESIZED IN THE LIVER.

TISSUE SPECIFICITY: PLASMA; SYNTHESIZED IN THE LIVER.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ANSFLEELRPSSLERECKEETCDFEEAREIFQNTENTMAFWSKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (Bovine).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AND CALCIUM-BINDING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PubMed-6896876;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Chordata; Craniata; Vertebrata; Euteleostomi; Cetartiodactyla; Ruminantia; Pecora; Bovoidea;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Esmon C.T.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DATA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DATA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       protein C)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        of bovine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    bovine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3.4.21.69)
n C) (Blood coagulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     of protein C are induced does not contain gamma-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    protein C.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    protein
                                                                                                                                                                                                                                                                                                                                                                                                                 PROTEASE THAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   protein
                                                                                                                                                                                                                                                                                                                                               factors
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  C. ",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        C
                                                                                                                                                                                                                                                                     IS CLEAVED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a
```

```
PROSITE; PSO0010; ASX_HYDROXYL; 1.

PROSITE; PSO0022; EGF 1; 1.

PROSITE; PS01186; EGF 2; 2.

PROSITE; PS01187; EGF CA; 1.

PROSITE; PS00011; GLU_CARBOXYLATION; 1.

PROSITE; PS50240; TRYPSIN_DOM; 1.

PROSITE; PS500134; TRYPSIN_HIS; FALSE_NE

PROSITE; PS00135; TRYPSIN_SER; 1.
                                                                                                                                                                                                                                                                         EGF-like
NON_TER
SIGNAL
DISULFID DISULFID DISULFID DISULFID DISULFID
                                              MOD_RES
ACT_SITE
ACT_SITE
ACT_SITE
DISULFID
DISULFID
                                                                                                      MOD_RES
MOD_RES
MOD_RES
                                                                                                                                  MOD_RES
MOD_RES
MOD_RES
                                                                                                                                                                               MOD_RES
MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                     Pfam; PF00089; trypsin; 1. Pfam; PF00594; gla; 1. SMART; SM00181; EGF; 2. SMART; SM00069; GLA; 1. SMART; SM00020; Tryp_SPc;
                                                                                                                                                                                                                                                                                                                                                                                                                                                   InterPro;
Pfam; PFOC
                                                                                                                                                             MOD_RES
                                                                                                                                                                                                                                                          CHAIN
                                                                                                                                                                                                                                                                                             Blood coagulation; Glycoprotein; Serine protease; Gamma-carboxyglutamic acid; Calcium-binding; Vitamin K; Hydroxylation; EGF-like domain; Repeat; Endothelial cell; Hydrolase; Signal.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PIR; A00928; KXBO. HSSP; P04070; 1PCU.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      use
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                the
                                                                                                                                                                                                                      DOMAIN
                                                                                                                                                                                                                               DOMAIN
                                                                                                                                                                                                                                       PEPTIDE
                                                                                                                                                                                                                                                  CHAIN
                                                                                                                                                                                                                                                                     PROPER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEROPS; S01.218;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EMBL; K02435; AAA30685.1; -.
                                                                                                                                                                                                            DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    s SWISS-PROT entry is copyright. It is produced through ween the Swiss Institute of Bioinformatics and the EN European Bioinformatics Institute. There are no rest by non-profit institutions as long as its content
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GLU RESIDUES ALLOWS THE MODIFIED PROTEIN TO BIND CALCIUM. MISCELLANEOUS: CALCIUM ALSO BINDS, WITH STRONGER AFFINITY ANOTHER SITE, BEYOND THE GLA DOMAIN. THIS GLA-INDEPENDENT SITE IS NECESSARY FOR THE RECOGNITION OF THE THROMBIN-THROMBOMODULIN COMPLEX.

SIMILARITY: BELONGS TO PEPTIDASE FAMILY $1.

SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                    PF00008;
                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; IPR000152; A
; IPR000561; E
; IPR001881; E
; IPR001254; S
; IPR000294; V
000008; EGF; 2.
 Asx_hydroxyl.
EGF-like.
EGF_Ca.
EGF_Ca.
Ser_protease_Try.
VitK_dep_GLA.
                                                                                                    EGF-LIKE 1.

EGF-LIKE 2.

EGF-LIKE 2.

SERIHE PROTEASE.

GAMMA-CARBOXYGLUTAMIC A
                                                                 CHARGE
CHARGE
CHARGE
                                                                                                                                                                                                                                                PROTEIN
PROTEIN
                                                                                              HYDROXYLATION
                                                                                                                                                                                                                                        ACTIVATION
Y SIMILARITY.
                                                                                                                                                                                                                                                                                                                                    FALSE_NEG
                                                                  RELAY
                                                                                     RELAY
                                                                                                                                                                                                                                                  ററ
                                                                                                                                                                                                                                                  LIGHT
                                                                                                                                                                                                                                        PEPTIDE
                                                                 SYSTEM.
SYSTEM.
                                                                                                                                                                                                                                                  CHAIN
                                                                                                      restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gh a collaboration -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BINDING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      way
```

```
RESULT
FA10_BC
   ALD ALD DE REPRESENTATION OF THE PROPERTY OF T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query
Best L
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CARBOHYD
CARBOHYD
CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DISULFID
DISULFID
   peptides
moieties
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Eukaryota;
Mammalia; |
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CARBOHYD
VARIANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DISULFID DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          _BOVIN
        Indue K., Morita T.;
"Identification of O-linked oligosaccharide chains in the activation "Identification of O-linked oligosaccharide chains in the activation action of blood change and the carbohydrate of the carbohydrate."
                                                                                                                                                                                                                                                                   McMullen B.A., Fujikawa K., Kisiel W.;
"The occurrence of beta-hydroxyaspartic of K-dependent blood coagulation zymogens."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Fung M.R., Campbell R.M., McGillivray R.; "Blood coagulation factor x mRNA encodes containing a prepro leader sequence."; Nucleic Acids Res. 12:4481-4492(1984).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE OF 1-487 FROM N.A. MEDLINE=84247315; PubMed=63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Bovidae; Bovinae;
NCBI_TaxID=9913;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         21-JUL-1986
13-AUG-1987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE
                                                                   MEDLINE=94062825;
                                                                                      SEQUENCE OF
                                                                                                                                                                                    ritani K., Fujikawa
                                                                                                                                                                                                    MEDLINE=76053069;
                                                                                                                                                                                                                        SEQUENCE OF
                                                                                                                                                                                                                                                                                                                       MEDLINE=83308813; PubMed=6688526;
                                                                                                                                                                                                                                                                                                                                        REVISION TO
                                                                                                                                                                                                                                                                                                                                                                       Biochemistry 19:659-667(1980).
                                                                                                                                                                                                                                                                                                                                                                                        tactor)
                                                                                                                                                                                                                                                                                                                                                                                                        *Amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                          Enfield
                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=80130563;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE OF 41-180.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        15-JUN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          P00743;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FA10_BOVIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CONFLICT
                                                                                                                                                     Bovine factor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           _
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         taurus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ANSFLEELRPGNVERECSEEVCEFEEAREIFQNTEDTMAFWS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWS
                                                                                                                    Natl.
                                                                                                                                                                                                                                                                                                                                                                                                                                   D.L.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
in
                                                                                                                                                                                                                                                    Biophys.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ; Metazoa;
Eutheria;
                                                                                                                                                                                                    183-492, CARBOHYDRATE-LINKAGE 53069; PubMed=1059093;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (Bovine).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         456
 blood coagulation
the activation of
                                                                                    183-233, AND
                                                                                                                                                                                                                                                                                                                                                                                                        sequence of the light chain
                                                                                                                    Acad.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (Rel. 01, Created)
(Rel. 05, Last sequence up
(Rel. 41, Last annotation
factor X precursor (EC 3.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          159
180
237
368
393
136
289
289
350
350
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                        Ericsson
                                                                                                                                                     ĭ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  172
318
253
382
421
136
289
289
350
350
366
82
82
456
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Bos.
                                                                   33, AND CARBOHYDRATE-LINKAGE
PubMed=8243461;
                                                                                                                                                                                                                                                       Res.
                                                                                                                                                                                                                                                                                                                                                                                                                                     PubMed=6766735,
csson L.H., Fuj
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PubMed=6330671;
                                                                                                                                                   (Stuart factor):
                                                                                                                                                                                    ×.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Chordata; Crania:
Cetartiodactyla;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61.3%;
                                                                                                                    □
                                                                                                                                                                                                                                                      Commun. 115:8-14(1983).
                                                                                                                                                                                    Enfield
                                                                                                                   ŝ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MW.
                                                                                                                   A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       N-LINKED
N-LINKED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        N-LINKED
F -> K.
                                                                                                                                                                                                                                                                                                                                                                                                                                        Fujikawa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pred. No. 1.5(
); Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ϋ́Þ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BY SIMILARI INTERCHAIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Craniata; Vertebrai
actyla; Ruminantia;
 factor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CAAF6833F894C209 CR
                                                                                                                                                                                    D.L.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SIMILARITY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ion update)
3.4.21.6)
                                                                                                                                                   amino-acid sequence
 X. The X.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (GLCNAC...)
(GLCNAC...)
(GLCNAC...
                                                                                                                                                                                                                                                                                                                                                                                                                                        .
.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           492
                                                                                                                                                                                    Ericsson
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       R.T.A.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           --
                                                                                                                                                                                                                                                                                      acid
                                                                                                                                                                                                                                                                                                                                                                                                        of bovine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Vertebrata;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 1;
.5e-13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ä
                                                                                                                                                                                                                                                                                                                                                                                                                                       Walsh K.A.,
                                                                                                                                                                                                                     SITES,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       single
                                                                                                                                                                                                                                                                                      in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (Stuart factor).
                                                                                  SITES
                                                                                                                                                                                  L.H.,
                                                                                                                                                                                                                                                                                      the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CRC64;
                                                                                                                                                                                                                     AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pecora;
                                                                                                                                                                                                                                                                                                                                                                                                        factor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       polypeptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Euteleostomi;
                                                                                                                                                                                                                                                                                      vitamin
                                                                                                                                                                                    Walsh K.A.,
                                                                                                                                                                                                                     DISULFIDE
                                                                                                                                                                                                                                                                                                                                                                                                                                        Neurath
                                                                                                                                                   0f
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          456;
                                                                                                                                                                                                                                                                                                                                                                                                        Bovoidea;
                                                                                                                                                   heavey
                                                                                                                                                                                                                                                                                                                                                                                                        (Stuart
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                                                       Η.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         chain
                                                                                                                                                                                                                     BONDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0
```

```
combined NMR-small angle X-ray scattering study.";
Biochemistry 35:11547-11559(1996).

-i- FUNCTION: Factor Xa is a vitamin K-dependent glycoprotein to converts prothrombin to thrombin in the presence of factor calcium and phospholipid during blood clotting.

-i- CATALYTIC ACTIVITY: Preferential cleavage: Arg-|-The and the Arg-|-The bonds in prothrombin to form thrombin.

-i- SUBUNIT: THE TWO CHAINS ARE FORMED FROM A SINGLE-CHAIN PRECUBY THE EXCISION OF TWO ARG RESIDUES AND ARE HELD TOGETHER BY
                                                                                                                                                                                      "How an epidermal growth factor (EGF)-like resolution NMR structure of the calcium for like domain in coagulation factor X.";
J. Biol. Chem. 267:19642-19649(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                      the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Biochemistry 11:4899-4903(1972).
                                                                                                                                                                                                                                                                                                           spectroscore. ...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ر.
[9]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Proc.
                                                                                                                               Trewhella
                                                                                                                                                     STRUCTURE BY NMR (MEDLINE=96387194;
                                                                                                                                                                                                                                   Selander-Sunnerhagen M., Ullner
Stenflo J., Drakenberg T.;
                                                                                                                                                                                                                                                                                                                                                              STRUCTURE BY NMR (MEDLINE=92329412;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 peptide."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "Localization of the structural coagulation factors X1 and X2 to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Morita T., Jackson C 
"Localization of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sugo T.,
                                                                                                                                          Sunnerhagen
                                                                                                                                                                                                                                                           MEDLINE=92406922;
                                                                                                                                                                                                                                                                                                       spectroscopy
                                                                                                                                                                                                                                                                                                                                       Teleman
                                                                                                                                                                                                                                                                                                                                                    Ullner M.,
                                                                                                                                                                                                                                                                                                                                                                                                 Biochemistry
                                                                                                                                                                                                                                                                                                                                                                                                                                             Selander M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                         MEDLINE=91084483;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STRUCTURE BY NMR OF 85-126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE=86140210; PubMed=3949800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sugo T. Bjoerk I., Holmgren A., Stenflo J.; "Calcium-binding properties of bovine factor carboxyglutumic acid-containing region."; J. Biol. Chem. 259:5705-5710(1984).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE=84185716;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CALCIUM-BINDING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Xa-alpha to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Fujikawa K.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE=76053121; PubMed=1059122;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "Bovine factor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Titani K., Hermodson
                                                                                                                   "The relative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE=73053314;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      'Activation
                                                                                                                                                                                                                                                                                                                                                                                                        JCTURE BY NMK OF 0. 120.61466;
LINE=91084483; PubMed=2261466;
ander M., Persson E., Stenflo J., Drakenberg T.;
ander M., Persson E., Stenflo J., Drakenberg T.;
NMR assignment and secondary structure of the Ca2(+)-free form of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BIOL.
                                                                                                                                                                                                                                                                                                                                           0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Biochem.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Chem.
                                                                                                       is altered by Ca2+ binding
                                                                                                                               ٦
: .
                                                                                                                                                                                                                                                                       ВΥ
                                                                                                                                                                                                                                                                                                                                                  BY NMR OF 85-126.
329412; PubMed=1627540;
Selander M., Persson E
                                                                                                                                         .
Z
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Davie E.W.;
tor X la (activated Stuart
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    of bovine factor X (Stuart factor):
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Acad. Sci. U.S.A. 72:3359-3363(1975).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            factor Xa-beta."
                                                                                                                                                                                                                                                                       NMR
                                                                                                                                                                                                                                                                                          ule of blood coagulation and simulated folding."; 31:5974-5983(1992).
                                                                                                                                                                                                                                                                                                                                                                                               29:8111-8118(1990).
                                                                                                                    orientation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         261:4008-4014(1986)
                                                                                                                                           Olah
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DATA
                                                                                                                                                               OF
                                                                                                                                                                                                                                                                       OF 85-126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       218:153-163(1993)
                                                                                                                                         PubMed=8794734;
lah G.A., Stenfl
                                                                                                                                                                                                                                                          PubMed=1527084;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PubMed=6546930,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PubMed=4264286;
                                                                                                                                                                  41-126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         М.А.,
                                                                                                                    of Gla
                                                                                                                                          Stenflo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Fujikawa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          difference
                                                                                                                                                                                                                                              ∡
∶
                                                                                                                                                                                                                                                                                                                                                   E) .
                                                                                                                   and EGF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              tyrosine
                                                                                                                                          J.,
                                                                                                                                                                                                                                                                                                                              apo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          7
                                                                                                                                                                                                                                                                                                                                                  Stenflo J.,
                                                                                                                                                                                                                                                Persson
                                                                                                                                                                                                                                                                                                                  factor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   factor).
                                                                                                                                           Forsen
                                                                                                                                                                                                                                                                                                                              form
                                                                                          domains i
he first E
g study.";
                                                                                                                                                                                                              form
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ericsson L.H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               between 1
18 in the
                                                                                                                                                                                                                          domain
                                                                                                                                                                                                                                                                                                                  ×
                                                                                                                                                                                                             of
                                                                                                                                                                                                                                                                                                                              of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        x lacking
                                                                                                                                          s.
                                                                                                                                                                                                                                                                                                                   as
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Evidence
                                                                                                                                                                                                             the NH2-terminal
                                                                                                                                                                                                                                               Teleman
                                                                                                                                                                                                                                                                                                                              the N-terminal
                                                                                                                                                                                                                                                                                                                                                   Drakenberg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      conversion
                                                                                                       in c
                                                                                                                                                                                                                                                                                                                  determined
                                                                                                                                                                                                                        binds
                                                                                                                                         Drakenberg
                                                                                                       coagulation F domain. A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          bovine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               activation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Walsh K.A.,
                                                                                                                                                                                                                        calcium.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    of homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          blood
                                                                                                                                                                                                                                                                                                                                                   Τ.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      οf
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gamma-
                                                                                                                                                                                                                                                                                                                  γď
                                      then
                                                                                                                                           <del>-</del>∃
    BY 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      factor
                                                            ٧a
                                                                                                                                                                                                                                                                                                                   NMR
                                                                                                                                                                                                             High
EGF-
    OR
```

```
Pfam: PF00594; gla; 1.
PRINTS; PR00722; CHYMOTRYPSIN.
PRINTS: PR00001; GLABLOOD.
SMART; SM000179; EGF_CA; 1.
SMART; SM00001; EGF_LIKe; 1.
SMART; SM00069; GLA; 1.
SMART; SM00020; Tryp_SPC; 1.
                                                                                                                                          Signal;
SIGNAL
PROPEP
CHAIN
CHAIN
PROPEP
CHAIN
 DOMAIN
DOMAIN
ACT_SITE
ACT_SITE
ACT_SITE
MOD_RES
MOD_RES
MOD_RES
                                                                                                                                                                                                                                                                                                                        PROSITE;
PROSITE;
PROSITE;
                                                                                                                                                                                                                                                                                   PROSITE;
PROSITE;
PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                              PROPEP
                                                                                                                                                                                                                   Glycoprotein; Hydrolase; Serine protease; Plasma; Blood coagulation; Gamma-carboxyglutamic acid; Hydroxylation; Calcium-binding; Vitamin Signal; Zymogen; EGF-like domain; Repeat; Sulfation; 3D-structure.
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pfam; PF00008; EGF; 2.
Pfam; PF00089; trypsin; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          InterPro; IPR001254; Ser_protease_Try.
InterPro; IPR000294; V1tK_dep_GLA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  InterPro: IPR000152; Asx_hydroxyl.
InterPro: IPR000314; Chymotrypsin.
InterPro: IPR000561; EGF-like.
InterPro: IPR000742; EGF_2.
InterPro: IPR000783; GLA_blood.
InterPro: IPR002383; GLA_blood.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GlycoSulteDB; P00743;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ÷
                                                                                                                                                                                                                                                           PROSITE;
                                                                                                                                                                                                                                                                       PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                L; X00673; CAA2528; A00925; EXBO; 1APO; 31-JAN-94; 1CCF; 31-MAY-94;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ANOTHER SITE, BEYOND THE GLA DOMAIN. SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1. SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PTM: THE ACTIVATION PEPTIDE IS CLEAVED BY FACTOR IXA (IN THE INTRINSIC PATHWAY), OR BY FACTOR VIIA (IN THE EXTRINSIC PATHWAY).
MISCELLANEOUS: CALCIUM ALSO BINDS, WITH STRONGER AFFINITY TO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MORE DISULFIDE BONDS PTM: THE VITAMIN K-D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CALCIUM.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GLUTAMIC ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1WHE; 15-MAY-97
                                                                                                                                                                                                                                                                    E; PS00010; ASX_HYDROXYL; 1.
E; PS00102; EGF_1; 1.
E; PS01186; EGF_2; 2.
E; PS01187; EGF_CA; 1.
E; PS01187; EGF_CA; 1.
E; PS00011; GTU_CARBOXYLATION; 1
E; PS00134; TRYPSIN_DOM; 1.
E; PS00134; TRYPSIN_HIS; 1.
                                                                                                                                                                                                                                                        PS00135;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                N- AND O-GLYCOSYLATED
                                                                                                                              24
41
183
183
234
476
  125
125
234
234
275
321
418
46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CAA25286.1; -.
                                                                                                                                                                                                                                                           TRYPSIN_SER; 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESIDUES
                                                                                                                              40
180
492
233
492
492
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     K-DEPENDENT,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ALLOWS
SERINE PROTEASE.
CHARGE RELAY SYSTEM.
CHARGE RELAY SYSTEM.
CHARGE RELAY SYSTEM.
GAMMA-CARBOXYGLUTAMIC A
GAMMA-CARBOXYGLUTAMIC A
GAMMA-CARBOXYGLUTAMIC A
                                                                                                                           FACTOR X LIGHT CHAIN.
FACTOR X HEAVY CHAIN.
FACTOR X HEAVY CHAIN.
ACTIVATED FACTOR XA, I
MAY BE REMOVED BUT IS
                                                                                      ACTIVATION.
EGF-LIKE 1, CALCIUM-BINDING
EGF-LIKE 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ENZYMATIC CARBOXYLATION THE MODIFIED PROTEIN TO
                                                                                                                              SI
                                                                                                                            HEAVY CHAIN
S NOT NECESS
 ACID.
ACID.
                                                                                                                              NECESSARY
                                                                                                   (POTENTIAL)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      OF SOME
                                                                                                                                                                                                                                 ~
```

```
RESULT
FA10_HU
   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FT FT FT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FAIO_HUMAN
FAIO_HUMAN
FAIO_HUMAN
FOOT42; 014340;
POOT42; 014340;
21-JUL-1986 (Rel. 01, Created)
01-CCT-1989 (Rel. 12, Last sequence update)
15-JUN-2002 (Rel. 41, Last annotation update)
15-JUN-2002 (Rel. 41, Last annotation update)
15-JUN-2004 (Stuart factor).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MOD_RES
MOD_RES
MOD_RES
MOD_RES
MOD_RES
                                                                                                                                                             Gene
                                                                  "Complete amino acid sequence of the light chain of human coagulation factor X: evidence for identification of resident-hydroxyaspartic acid.";
Biochemistry 22:2875-2884(1983).
                                                                                                                                                                                  CDNA.
                                                                                                                                                                                                        Kaul
                                                                                                                                                                                                                                                                                                                                                     Leytus S.P., Foster D.C., Kurachi K., Davie E.W.;
"Gene for human factor X: a blood coagulation factor whose organization is essentially identical with that of factor protein C.";
                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A.

MEDILINE-91216473; PubMed=1902434,

Messier T.L., Pittman D.D., Long

"Cloning and expression in COS-1

human coagulation factor X.";

Gene 99:291-294(1991).
 MEDLINE-84222026;
Leytus S.P., Chung
"Characterization
                                                          Biochemistry
[6]
                                                                                                                        SEQUENCE OF 41-179.
MEDLINE=83257207; PubMed=6871167;
MCMullen B.A., Fujikawa K., Kisiel W.,
                                                                                                                                                                                                                                                             Fung M.R., Hay C.W., McGillivray R.T.A.; "Characterization of an almost full-length cDNA coding blood coagulation factor X."; proc. Natl. Acad. Sci. U.S.A. 82:3591-3595(1985).
                                              SEQUENCE
                                                                                                                 Kwa E.Y., Weinstein B.;
                                                                                                                                                                                                                  MEDLINE-86221713;
                                                                                                                                                                                                                              TISSUE-Liver;
                                                                                                                                                                                                                                         SEQUENCE OF 19-488
                                                                                                                                                                                                                                                                                                          MEDLINE=85216545;
                                                                                                                                                                                                                                                                                                                      SEQUENCE OF 13-488 FROM N.A
                                                                                                                                                                                                                                                                                                                                            Biochemistry
                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE=87026600; PubMed=3768336;
                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NCBI_TaxID=9606;
                                                                                                                                                                                              "Isolation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ANSFLEEVKQGNLERECLEEACSLEEAREVFEDAEQTDEFWSKY
                                                                                                                                                                                                        R.K.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
                                                                                                                                                                      41:311-314(1986)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               l Similarity
18; Conser
                                             OF 115-488 FROM N.A.,
                                                                                                                                                                                              and characterization
                                                                                                                                                                                                       Hildebrand
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                          25:5098-5102(1986).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3; PubMed=3011603;
3; PubMed=3011603;
---d B., Roberts S., Jagao
PubMed=6587384;
g D.W., Kisiel W.,
of a cDNA coding
                                                                                                                                                                                                                                                                                                          PubMed=2582420;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PubMed=1902434;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             666666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           54.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GAMMA-CARBOXYGLUTAMIC A
GAMMA-CARBOXYGLUTAMIC A
GAMMA-CARBOXYGLUTAMIC A
GAMMA-CARBOXYGLUTAMIC A
GAMMA-CARBOXYGLUTAMIC A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pred. No. 4.86); Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score
                                              AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                         G.L.,
cells
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           108;
No. 4.
  Kurachi K., Davie E:W.;
for human factor X.";
                                             TISSUE SPECIFICITY
                                                                                                                                                                                           Jagadeeswaran P.;
man blood-coagulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Kaufman R.J., Chu
of a full-length
                                                                                                                           Sasagawa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .8e-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 492;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACID.
ACID.
ACID.
ACID.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Euteleostomi;
                                                                                                                           Howald W.N.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Church W.R.;
                                                                                           residue
                                                                                                                                                                                                                                                                                    for
                                                                                                                                                                                                                                                                                                                                                                                                                                                         CDNA
                                                                                          blood
due 63
                                                                                                                                                                                                                                                                                                                                                                 e gene
IX and
                                                                                                                                                                                              factor X
                                                                                                                                                                                                                                                                                    human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
                                                                                                                                                                                                                                                                                                                                                                                                                                                       encoding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
```

```
EMBL; L10396;
EMBL; M22613;
EMBL; M21886;
EMBL; M33297;
EMBL; M33297;
EMBL; A25853; A
PIR; A25853; A
PIR; A24478; A
PDB; 1HCG; 08-
                                                               EMBL;
EMBL;
EMBL;
EMBL;
EMBL;
EMBL;
EMBL;
EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Proc.
                                                                                                                                                                                                          EMBL;
                                                                                                                                                                                                                                               entities requires a
                                                                                                                                                                                                                                                         the European Bioinformatics Institute. The use by non-profit institutions as long modified and this statement is not removed.
                                                                                                                                                                                                                                                                                                  between
                                                                                                                                                                                                                                                                                                                                         ÷
                                                                                                                                                                                                                                                                                                                                                                                                                               -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE=98283982;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Padmanabhan K., Padmanabhan K.P., Tulinsh
Huber R., Blankenship D.T., Cardin A.D.,
"Structure of human des(1-45) factor Xa a
J. Mol. Biol. 232:947-966(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                X-RAY CRYSTALLOGRAPHY (2.2 ANGSTROMS)
MEDLINE=93360277; PubMed=8355279;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Jagadeeswaran P., Reddy S.V., Rao K.: "Cloning and characterization of the encoding human factor X.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE=90128299;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "Identification of O-linked oligosaccharide peptides of blood coagulation factor X. The moieties in the activation of factor X.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                        -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Kamata K., Kawamoto
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gene 84:517-519(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      factor Xa.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Inoue K., Morita
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Structural
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -RAY CRYSTALLOGRAPHY (2.3 ANGSTROMS)
                                                                                                                                                                                                                                 send
                                                                                                                                                                                                                                                                                                                                                                                                                                                  calcium and phospholipid during blood clotting. CATALYTIC ACTIVITY: Preferential cleavage: Arg-|-Thr and then Arg-|-Ile bonds in prothrombin to form thrombin.
SUBUNIT: THE TWO CHAINS ARE FORMED FROM A SINGLE-CHAIN PRECURSOR BY THE EXCISION OF TWO ARG RESIDUES AND ARE HELD TOGETHER BY 1 OMORE DISULFIDE BONDS.
                                                                                                                                                                                                                                                                                                                                     PTM: THE ACTIVATION PEPTIDE IS CLEAVED BY FACTOR IXA (IN INTRINSIC PATHWAY), OR BY FACTOR VIIA (IN THE EXTRINSIC SIMILARITY: BELOWGS TO PEPTIDASE FAMILY S1.
SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
                                                                                                                                                                                                                                                                                                                                                                                                              TISSUE SPECIFICITY: Plasma; synthesized in the live PTM: THE VITAMIN K-DEPENDENT, ENZYMATIC CARBOXYLATIGUTAMIC ACID RESIDUES ALLOWS THE MODIFIED PROTEIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2. Natl. Acad. Sci. U.S.A. 95:6630-6635(1998). FUNCTION: Factor Xa is a vitamin K-dependent glycoprotein that converts prothrombin to thrombin in the presence of factor Va,
                                                                                                                                                                                                                                                                                                                                                                                        PTM:
                                                                                                                                                                                                                                                                                                                                                                                                    CALCIUM.
                                                                                                                                                                                                                                                                                               SWISS-PROT entry is copyright. It is produced through a collaboration een the Swiss Institute of Bioinformatics and the EMBL outstation -
                                                                                                                              L00392;
L00393;
                                                                                                                                                       L00390;
L00391;
                                                                                                                                                                                 K03194;
M57285;
L29433;
                                                                                                     L00395;
                                                                                                                                                                                                                                  an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       OF 1-23 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         OF 183-234,
                                                                                                                                                                                                                                                                                                                                                                                        N- AND O-GLYCOSYLATED
 3; A25853.
8; A24478.
08-MAY-95
                                                                                                                                                                                                                                  email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  basis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Acad.
                                                             AAA52764.1;
AAA52764.1;
AAA52764.1;
AAA52764.1;
AAA52764.1;
AAA52764.1;
AAA52764.1;
AAA52486.1;
                                                                                                                                                                                 AAA52490.1;
AAA52421.1;
AAA52764.1;
                                       EXHU
                                                                                                                                                       AAA52764.1;
AAA52764.1;
                                                  AAA52636
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               218:153-163(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  to H., Honma T., Iwama T for chemical inhibition
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PubMed=2612918;
Reddy S.V., Rac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PubMed=9618463;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             34, AND CARBOHYDRATE-LINKAGE SITES PubMed=8243461;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sci.
                                                                                                                                                                                                                                             license agreement (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   U.S.A.
                                                                                      JOINED.
JOINED.
JOINED.
JOINED.
JOINED.
JOINED.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 81:3699-3702(1984).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                K.J.,
the 5'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Tulinsky
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QF.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          aT., .
n of b
                                                                                                                                                                                                                                                                      There are no restrictions ng as its content is in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          sky A., Park C.H., Bode
, Kisiel W.;
at 2.2-A resolution.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Hamsabhushanam K., I end (exon 1) of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       86-179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               86-179 AND 235-278
                                                                                                                                                                                                                                                                                                                                                                                                              d in the liver.
CARBOXYLATION (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Kin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       chains in the activation role of the carbohydrate
                                                                                                                                                                                                                                                          Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .
H.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                blood coagulation
                                                                                                                                                                                                                                                          bу
                                                                                                                                                                                                                                                             and
                                                                                                                                                                                                                                                                                                                                                                          (IN
                                                                                                                                                                                                                                                                                                                                                                                                               OF SOME
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Lyman
ne gene
                                                                                                                                                                                                                                                             for
                                                                                                                                                                                                                                                                                                                                                               PATHWAY)
                                                                                                                                                                                                                                                             n no way
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            G.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  OR.
                                                                                                                                                                                                                                                                                     on
                           Query Match
```

```
PRINTS; PRO00U1; GET_IKe; 1.

R SMART; SM00179; EGF_CA; 1.

R SMART; SM0001; EGF_IKe; 1.

R SMART; SM00069; GLA; 1.

PROSITE; PS000010; ASX_HYDROXYL; 1.

DR PROSITE; PS00002; EGF_1; 1.

DR PROSITE; PS01186; EGF_2; 2.

DR PROSITE; PS01187; EGF_CA; 1.

DR PROSITE; PS00011; GLU_CARBOXYLATION; 1.

PROSITE; PS00011; TRYPSIN_DOM; 1.
DISULFID DISULFID DISULFID
                                   ACT_SITE
ACT_SITE
ACT_SITE
DISULFID
                                                                                                                                 CARBOHYD
CARBOHYD
                                                                                                                                                                            MOD_RES
MOD_RES
                                                                                                                                                                                                                                                                                                                    CHAIN
PROPEP
CHAIN
DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                           Signal;
                                                                                                                                                                                                                                                            MOD_RES
                                                                                                                                                                                                                                                                                    DOMAIN
MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                   Gamma-carboxyglutamic acid;
                                                                                                                                                                                                                                                                                                                                                                                                                            Glycoprotein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Genew;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GlycoSuiteDB;
                                                                                              CARBOHYD
                                                                                                                     CARBOHYL
                                                                                                                                                       MOD_RES
                                                                                                                                                                   MOD_RES
                                                                                                                                                                                                               MOD_RES
                                                                                                                                                                                                                             MOD_RES
                                                                                                                                                                                                                                      MOD_RES
                                                                                                                                                                                                                                                   MOD_RES
                                                                                                                                                                                                                                                                                                                                                                    CHAIN
                                                                                                                                                                                                                                                                                                                                                                              PROPEP
                                                                                                                                                                                                                                                                                                                                                                                                                                         PROSITE; PS00135;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRINTS; PR00722; CHYMOTRYPSIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pfam; PF00594; gla;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pfam; PF00089; trypsin; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pfam; PF00008;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MIM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEROPS;
                                                                                                                                                                                                                                                                                                            DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              HGNC:3528;
                                                                                                                                                                                                                                                                                                                                                                                                     Zymogen;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S01.216;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       o; IPRO00152; Asx_hydroxyl.
o; IPRO01314; Chymotrypsin.
o; IPR000561; EGF-1like.
o; IPR001881; EGF-2.
o; IPR001881; EGF-Ca.
o; IPR001383; GIA_blood.
o; IPR001254; Ser_protease_Try.
o; IPR001294; VitK_dep_GLA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            29-OCT-97.
17-JUN-98.
23-MAR-99.
23-MAR-99.
  276
322
419
90
95
112
                                                                                                                    46
47
560
60
65
66
67
72
72
103
1199
2211
                                                                                              231
                                                                                                                                                                                                                                                                                                                                             32
41
183
183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            P00742;
528; F10.
                                                                                                                                                                                                                                                                                                                                                                                                                            Hydrolase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EGF;
                                                                                                                                                                                                                                                                                                                                                                                                      EGF-like
                                                                                                                                                                                                                                                                                                                                                                                                                                       TRYPSIN_SER;
                                                                                                                    103
199
211
221
                                                                                                                                                                                                                                                                                                488
                                                                                                                                                                                                                                                                                                                       488
234
488
122
                                                                                              231
                                                                                                                                                                   60
65
69
72
                                                                                                                                                                                                                                                                                                                                                                                                                            Serine protease; Plasma; Blood coagulation;
                                                                                                                                                                                                                                                                                                                                                                                                      domain;
                                                                                                                                                                                                                                                                                                                                                                                                    Hydroxylation; Calcium-bino omain; Repeat; 3D-structure
                                             CHARGE RELAY SYSTEM.
CHARGE RELAY SYSTEM.
                                                                                /FTId=CAR_000012.
N-LINKED (GLCNAC...).
/FTId=CAR_000013.
                                                                                                                 O-LINKED (GALNAC. . N-LINKED (GLCNAC. .
                                                                                                                                          O-LINKED (GALNAC. .
                                                                                                                                                      HYDROXYLATION.
                                                                                                                                                                   GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                             GAMMA-CARBOXYGLUTAMIC GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                     GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                               GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                          GAMMA-CARBOXYGLUTAMIC GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                 GAMMA - CARBOXYGLUTAMIC
GAMMA - CARBOXYGLUTAMIC
GAMMA - CARBOXYGLUTAMIC
GAMMA - CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                                                                           ACTIVATED FACTOR XA, HEAVY CHAIN EGF-LIKE 1, CALCIUM-BINDING (POTEGF-LIKE 2.
                                                                                                                                                                                                                                                                                               SERINE
                                                                                                                                                                                                                                                                                                                                                        FACTOR X LIGHT CHAIN.
                                                                                                                                                                                                                                                                                                                                            ACTIVATION PEPTIDE
                                                                                                                                                                                                                                                                                                 PROTEASE
                                                                                                                                                                                                                                                                                                                                                                                                                Calcium-binding;
                                                                                                                                                                  ACID.
                                                                                                                                                                                                                                                                                                                       (POTENTIAL)
                                                                                                                                                                                                                                                                                                                                                                                                                 Vitamin
                                                                                                                                                                                                                                                                                                                                                                                                                   ~
```

53.8%;

Score 107;

DВ

1;

Length 488;

```
RESULT 10
FA7_RABIT
ID FA7_F
                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   á
                                                   В
                                                                    õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 9
TMG3_HUMAN
                                                                                          Query Match
Best Local S
Matches 16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Similarity 40.9
Matches 18; Conservative
 _RABIT
FA7_RABIT
                                                                                                                                            TRANSMEM
DOMAIN
DOMAIN
                                                                                                                                                                                                                                         PRINTS;
SMART; S
                                                                                                                                                                                                                                                                                                                                          This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial
                                                                                                                                                                                                                                                                                                                                                                                                                                  TISSUE-Spinal cord;

MEDLING-21117044; PubMed-11171957;

Kulman J.D., Hartis J.E., Xie L., Davie E.W.;

"Identification of two novel transmembrane gamma-carboxyglutamic proteins expressed broadly in fetal and adult tissues.";

Proc. Natl. Acad. Sci. U.S.A. 98:1370-1375(2001).

-i- SUBCELLULAR LOCATION: Type I membrane protein.

-i- TISSUE SPECIFICITY: Expressed in brain, lung, kidney and hear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Homo sapiens (Human).
Eukaryota, Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            15-JUN-2002 (Rel. 41, Created)
15-JUN-2002 (Rel. 41, Last sequence update)
15-JUN-2002 (Rel. 41, Last annotation update)
Transmembrane gamma-carboxyglutamic acid prot
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TMG3_HUMAN Q98ZD7;
                                                                                                                                                                                                                                                                                        EMBL; AF326350; AAK00955.1; -. HSSP; P00740; 1CFH.
                                                                                                                                                                                                                                                                                                                                  entitles requires a license agreement (See http://www.isb-sib:ch/announce/
                                                                                                                                     SEQUENCE
                                                                                                                                                                              DOMAIN
                                                                                                                                                                                                                  Gamma-carboxyglutamic acid; Vitamin K; Transmembrane
                                                                                                                                                                                                                        Pfam; PF00594; gla; 1.

PRINTS; PR00001; GLABLOOD.

SMART; SM00069; GLA; 1.

SMO0061; GLU_CARBOXYLATION; 1.

PROSITE; PS00011; GLU_CARBOXYLATION; 1.
                                                                                                                                                                                                                                                                     InterPro; IPR002383; GLA_blood.
InterPro; IPR000294; VitK_dep_GLA.
                                                                                                                                                                                                                                                                                                                       or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NCBI_TaxID-9606;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  41
                                                   20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TISSUE SPECIFICITY: Expressed in brain, lung, kidney and heart.

PTM: Cla residues are produced after subsequent posttranslational modifications of glutamic acid by a vitamin K-dependent gamma-
                                                                                                                                                                                                                                                                                                                                                                                                        carboxylase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ANSFLEEMKKGHLERECMEETCSYEEAREVFEDSDKTNEFWNKY
                                                                      ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
                                                   ANEFLEELROGTIERECMEEICSYEEVKEVFENKEKTMEFW
                                                                                           16; Conser
                                                                                           Conservative
                                                                                                                                                                  20
79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gamma-carboxyglutamic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STANDARD;
  STANDARD;
                                                                                                                             78
101
231
60
25848
                                                                                                     50.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   40.9%;
                                                                                                                                     ¥
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9,
                                                                                           9
                                                                                          Score 101; DB Pred. No. 3.4e 9; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Pred.
                                                                                                                                            CYTOPLASMIC (POTENTIAL)
GLA-RICH.
                                                                                                                                                                 EXTRACELLULAR (POTENTIAL)
POTENTIAL.
                                                                                                                                                                                     TRANSMEMBRANE GAMMA-CARBOXYGLUTAMIC PROTEIN 3.
                                                                                                                                                                                                          POTENTIAL
  PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRT;
                                                                                                                                   8A373E4848490D81 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mismatches
                                                                                                    2 101;
3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   o
O
  444
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1.1e-11;
nes 17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            protein
 Å
                                                                                                     .4e-10
                                                                                                               DB 1;
                                                                                           16;
                                                   60
                                                                      41
                                                                                                             Length 231;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3 precursor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0,
                                                                                           0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
                                                                                           0
```

```
Ruiz S.R., Blajchman M.A., Clarke B.J.;
Submitted (NOV-1996) to the EMBL/GenBank/DDBJ databases.

-i- FUNCTION: CIRCULATES IN THE BLOOD IN A ZYMOGEN FORM, FACTOR VII IS
CONVERTED TO FACTOR VIIA BY FACTOR XA, FACTOR XIIA, FACTOR IXA, OR
THROMBIN BY MINOR PROTECLYSIS. IN THE PRESENCE OF TISSUE FACTOR A
AND CALCIUM IONS, FACTOR VIIA THEN CONVERTS FACTOR X TO FACTOR XA
BY LIMITED PROTECLYSIS. FACTOR VIIA WILL ALSO CONVERT FACTOR IX TO
FACTOR IXA IN THE PRESENCE OF TISSUE FACTOR AND CALCIUM (BY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      P98139; P79224;
01-FEB-1996 (Rel. 33, Created)
15-JUL-1998 (Rel. 36, Last sequence update)
15-JUN-2002 (Rel. 41, Last annotation update)
Coagulation factor VII precursor (EC 3.4.21.21)
PROSITE; PS00010; ASX_HYDROXYL; PROSITE; PS00022; EGF_1; 1. PROSITE; PS01186; EGF_2; 1.
                                                               SMART; SM00179; EGF_CA; 1.
SMART; SM00001; EGF_like; 1.
SMART; SM00069; GLA; 1.
SMART; SM00020; Tryp_SPc; 1.
                                                                                                                                                   Pfam; PF00089; trypsin; 1.
Pfam; PF00594; gla; 1.
PRINTS; PR00722; CHYMOTRYPSIN.
PRINTS; PR00001; GLABLOOD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EMBL; U77477; AAB37326.1; -. HSSP; P08709; 1FAK.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -!- SUBUNIT: HETERODIMER OF A LIGHT CHAIN AND BY A DISULFIDE BOND (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SIMILARITY).
-!- CATALYTIC ACTIVITY: Hydrolyzes one Arg-|-Ile bond
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE=93190306; PubMed=8383365;
Brothers A.B., Clarke B.J., Sheff
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          conversion
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            or send
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      entities requires a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           modified and this statement is not removed.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TISSUE-Liver,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Thromb.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TISSUE-Liver;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NCBI_TaxID=9986;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Oryctolagus
                                                                                                                                                                                                                                               Pfam; PF00008;
                                                                                                                                                                                                                                                                        InterPro;
                                                                                                                                                                                                                                                                                           InterPro;
                                                                                                                                                                                                                                                                                                                                                                                      InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEROPS; S01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REVISION TO 395
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    factor VII.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "Complete nucleotide
                                                                                                                                                                                                                                                                                                                     InterPro;
                                                                                                                                                                                                                                                                                                                                          InterPro;
                                                                                                                                                                                                                                                                                                                                                                 InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                              InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                   InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CALCIUM (BY SIMILARITY).
SIMILARITY: BELONGS TO PEPTIDASE FAMILY
SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TISSUE SPECIFICITY: PLASMA.
PTM: THE VITAMIN K-DEPENDENT,
GLUTAMIC ACID RESIDUES ALLOWS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                European Bioinformatics Institute. by non-profit institutions as 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          form factor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SWISS-PROT entry is copyright. It is produced through a collaboration een the Swiss Institute of Bioinformatics and the EMBL outstation -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                               IPR000152; Asx_hydroxyl.
IPR001314; Chymotrypsin.
IPR000561; EGF-like.
                                                                                                                                                                                                                                                                        IPR001254;
IPR000294;
                                                                                                                                                                                                                                                                                                                  IPR001881;
IPR002383;
                                                                                                                                                                                                                                                                                                                                                                 IPR000742;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Metazoa;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        accelerator).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      cuniculus (Rabbit).
-^- Chordata; Craniata;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Suppl.
                                                                                                                                                                                                                                                   EGF;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 license agreement (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Chordata; Craniata; Vertebrata; Euteleostomi; Lagomorpha; Leporidae; Oryctolagus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               69:231-238(1993).
                                                                                                                                                                                                                                                                                                                  EGF_Ca.
GLA_blood.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                institutions as long
                                                                                                                                                                                                                                                                      Ser_protease_Try.
VitK_dep_GLA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         sequence of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sheffield w.P., Blajchman M.A.; ce of the cDNA encoding rabbit coagulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ENZYMATIC CARBOXYLATION THE MODIFIED PROTEIN TO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         There are no rest
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A HEAVY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (Serum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ý
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CHAIN LINKED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 in factor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             prothrombin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BIND SOME
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ×
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   5
```

```
RN OCC OCC DET DE
                                                                                                                                                                                                                    γ
                                                                                                                                                                                                                                                                                                맑
                                                                                                                                                                                                                                               Query Match
Best Local S
Matches 19
                          Oryctolagus
Eukaryota; M
Mammalia; Eu
                                                                       019045;
15-DEC-1998
15-DEC-1998
15-JUN-2002
Coagulation
                                                                                                                                                                                                                                                                                               MOD_RES
CARBOHYD
CARBOHYD
CARBOHYD
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ACT_SITE
ACT_SITE
ACT_SITE
BINDING
DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PROSITE;
PROSITE;
PROSITE;
PROSITE;
PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                          MOD_RES
MOD_RES
MOD_RES
MOD_RES
MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DISULFID DISULFID MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DISULFID DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DISULFID DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DISULFID DISULFID DISULFID
                                                                                                                                                  RABIT
                                                                                                                                                                                                                                                                                                                                                         MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                  MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Liver; Pl
EGF-like
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Hydrolase; Serine protease; Blood coagulation; Zymogen; Glycoprotein; Liver; Plasma; Vitamin K; Calcium-binding; Gamma-carboxyglutamic acid
                                                                                                                                    FA10_RABIT
           NCBI_TaxID=9986;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DISULFID
                                                                                                                                                                                                40
                                                                                                                                                                                                                                                Local Similarity
les 19; Conser
                                                                                                                                                                                                                        1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIF2DVDDTLAFW 41
                                                                                                                                                                                                 ANSFLEELRPGSLERECKEELCSFEEAREVFQSTERTKQFW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PS00135;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PS001187;
PS00011;
PS50240;
PS00134;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       domain;
                        us cuniculus (Rabbit).
; Metazoa; Chordata; Craniata;
Eutheria; Lagomorpha; Leporid
                                                                       (Rel. (Rel. 4
                                                                                                                                                                                                                                                                                                444
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                56
89
94
111
130
137
153
                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           22
40
192
45
85
85
126
192
                                                                                                                                     STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Repeat;
                                                                        37, Created)
37, Last sequence update)
41, Last annotation update)
x x precursor (EC 3.4.21.6)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TRYPSIN_SER;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EGF_CA; 1.
GLU_CARBOXYLATION;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TRYPSIN_DOM;
                                                                                                                                                                                                                                                                                                  49011
                                                                                                                                                                                                                                                         50.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Signal; Hydroxylation.
                                                                                                                                                                                                                                                                                                  M.
                                                                                                                                                                                                                                                                                                                                                       BY SIMILARITY.

BY SIMILARITY.
                                                                                                                                                                                                                                                5;
                                                                                                                                                                                                                                               Score 101; DE Pred. No. 7.26
5; Mismatches
                                                                                                                                                                                                                                                                                              HYDROXYLATION (BY SIMILARITY)
N-LINKED (GLCNAC. . .) (POTEN
N-LINKED (GLCNAC. . .) (POTEN
N-LINKED (GLCNAC. . .) (POTEN
(GLCNAC. . .) (POTEN
(GLCNAC. . .) (POTEN)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GLA-RICH.
EGF-LIKE 1, CALCIUM-BINDING
EGF-LIKE 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CLEAVAGE (B) FACTOR IXA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SERINE PROTEASE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FACTOR VII LIGHT CHAIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            POTENTIA
                         Leporidae;
                                                                                                                                     490
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (BY FACTOR XA, FACTOR XIIA,
{A, OR THROMBIN) (BY SIMILARITY).
                                       Vertebrata; Euteleostomi;
                                                                                                                                                                                                                                                           DB 1;
.2e-10;
                                                                                                                                     ĀĀ
                      Oryctolagus
                                                                         (Stuart
                                                                                                                                                                                                                                                                      Length 444;
                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                     ) (POTENTIAL).
                                                                                                                                                                                                                                                                                                            (POTENTIAL).
                                                                         factor)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (POTENTIAL)
                                                                                                                                                                                                                                                0
                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  acid;
                                                                                                                                                                                                                                                0;
  PROPEP
CHAIN
CHAIN
PROPEP
CHAIN
DOMAIN
DOMAIN
                                                                                                 Signal
SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                     InterPro;
InterPro;
                                                                                                                                                                                                                                                                                                                        Pfam;
                                                                                                                                                                                                                                                                                                                                                           InterPro;
                                                                                                                                                                                                                                                                                                                                                                     InterPro;
                                                                                                                                                                                                                                                                                                                                                                                   InterPro;
                                                                                                                                                                                                                                                                                                                                                                                             InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                          InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                             InterPro;
```

```
EMBL; AF003200; HSSP; P00742; 1
                                                                                                                                                                                                                                  modified and this statement is not removed entitles requires a license agreement (See or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       the European Bioinformatics Institute. The second of the s
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pendurthi U.R., Anderson K.D., James H.L.;
"Characterization of a full-length cDNA for rabbit factor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A. MEDLINE=97256311;
                                                                MEROPS; S01.216;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MORE DISCULPIDE BONDS.

MORE DISCULPIDE BONDS.

PTM: THE VITAMIN K-DEPENDENT, ENZYMATIC CAP
PTM: THE VITAMIN K-DEPENDENT, ENZYMATIC CAP
PTM: ACID RESIDUES ALLOWS THE MODIFIED
CALCIUM (BY SIMILARITY)

PTM: N- AND O-GLYCOSYLATED (BY SIMILARITY)

PTM: THE ACTIVATION PEPTIDE IS CLEAVED BY
INTRINSIC PATHWAY), OR BY FACTOR VIIA (IN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MISCELLANEOUS: CALCIUM ALSO BINDS, WITH ANOTHER SITE, BEYOND THE GLA DOMAIN. SIMILARITY: BELONGS TO PEPTIDASE FAMILY SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BY THE EXCISION OF TWO ARG RESIDUES AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (BY SIMILARITY).
IPR0001
                                                                                                                 1HCG.
                                                                                                                                                                 AAB62542.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PubMed=9101642;
                                                                                                                                                                                                                                                                                                                   (See http://www.isb-sib.ch/announce,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MATIC CARBOXYLATION OF SOME MODIFIED PROTEIN TO BIND
                                                                                                                                                                                                                                                                                                                                                                                                                         There are no rest
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A SINGLE-CHAIN PRECURSOR ARE HELD TOGETHER BY 1 OR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STRONGER AFFINITY TO
                                                                                                                                                                                                                                                                                                                                                                              Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FACTOR IXA (IN THE THE EXTRINSIC PATHWAY)
                                                                                                                                                                                                                                                                                                                                                                              bу
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    restrictions
                                                                                                                                                                                                                                                                                                                                                                              and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EMBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ×. ";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           വ
                                                                                                                                                                                                                                                                                                                                                                              for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     collaboration
L outstation -
                                                                                                                                                                                                                                                                                                                                                                              commercia
                                                                                                                                                                                                                                                                                                                                                                                                                                    no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               on
```

PRINTS; PR00001; GLABLOOD.

SMART; SM000179; EGF_CA; 1.

SMART; SM00001; EGF_L1Ke; 1.

SMART; SM00002; EGF_L1 :

SMART; SM00002; Tryp_SPc; 1.

PROSITE; PS00010; ASX_HYDROXYL; 1.

PROSITE; PS00186; EGF_2; 2.

PROSITE; PS01186; EGF_2; 2.

PROSITE; PS01187; EGF_CA; 1.

PROSITE; PS01187; EGF_CA; 1.

PROSITE; PS00114; GLU_CARBOXYLATION; 1.

PROSITE; PS00134; TRYPSIN_DOM; 1.

PROSITE; PS00134; TRYPSIN_DOM; 1. Gamma-carboxyglutamic
Signal; Zymogen; EGF-Pfam; PF00008; Pfam; PF00089; PRINTS; PR00722; CHYMOTRYPSIN PROSITE; PS00135; PF00594; IPRO00742; EGF_2.
IPRO01881; EGF_Ca.
IPRO02383; GLA_blood.
IPRO01254; Ser_protease_Try.
IPRO00294; VitK_dep_GLA. IPR000152; Asx_hydroxyl. IPR001314; Chymotrypsin. IPR000561; EGF-like. Hydrolase; gla; trypsin; 1. TRYPSIN_SER; 1. 20 180 190 232 232 122 165 acid; like d Serine protease; Plasma; Blood coagulation; id; Hydroxylation; Calcium-binding; Vitamin domain; Hydroxylation; omain; Repeat. POTENTIAL.

BY SIMILARITY.
FACTOR X LIGHT CHAIN.
FACTOR X HEAVY CHAIN.

ACTIVATION PEPTIDE.
ACTIVATED FACTOR XA, HEAVY CHAIN
EGF-LIKE 1, CALCIUM-BINDING (POTEGF-LIKE 2.

(POTENTIAL).

PROTEASE

Insley M.Y.,

Lund-Hansen

.**⊣**

-

of human

cells.";

```
$\text{Q}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}\frac{1}{1}\frac{1}\frac{1}{1}\frac{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}\frac{1}{1}\frac{1}\frac{1}{1}\frac{1}\frac{1}\frac{1}\frac{1}\frac{1}\frac{1}\frac{1}
   RRRRR OOC OO DETT
                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                 RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local S
Matches 18
                                                                                                                                                                                                     ESULT 12
A7_HUMAN S
D FA7_HUMAN S
C P08709; Q14339;
T 01-3AN-1988 (Rel
T 01-JAN-1998 (Rel
T 15-JUN-2002 (Rel
G Coagulation fact
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ACT_SITE
ACT_SITE
ACT_SITE
ACT_SITE
ACT_SITE
DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CARBOHYD
CARBOHYD
                                                                                               Euxaryota; Metazoa;
Mammalia; Eutheria;
NCBI_TaxID=9606;
                   TISSUE-Liver;
MEDLINE-86205965; PubMed-3486420;
Hagen F.S., Gray C.L., O'Hara P.J
                                                                                                                                                                                        conversion
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MOD_RES
   Woodbury R.G.,
                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                 41
                                                                                                                                                                                                                                                                                                                                                                                                 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
                                                                                                                                                      sapiens (Human)
                                                                                                                                                                                                                                                                                                                                                                                 ANSFLEELKKGNLERECMEENCSYEEALEVFEDREKTNEFWNKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                                        accelerator)
                                                                                                                                                                                              (Rel. 06, Created)
(Rel. 06, Last sequence update)
(Rel. 41, Last annotation update)
factor VII precursor (EC 3.4.21.21)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    103
3274
320
417
90
95
112
112
1136
1151
172
239
388
413
413
611
187
Gray C.L., O'l
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 103
320
417
101
110
110
1121
140
149
164
340
244
275
402
441
61
161
183
205
                                                                                                                                                                                                                                                                                             STANDARD;
                                                                                                              Primates;
                                                                                                                                      Chordata;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 50.3%;
                   O'Hara P.J.,
                                                                                                                                                                                      (Eptacog alfa).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        X
X
   Insley M.Y.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GAMMA-CARBÓXYGLUTAMIC ACID
SIMILARITY).
GAMMA-CARBOXYGLUTAMIC ACID
SIMILARITY)
GAMMA-CARBOXYGLUTAMIC ACID
SIMILARITY).
GAMMA-CARBOXYGLUTAMIC ACID
SIMILARITY).
GAMMA-CARBOXYGLUTAMIC ACID
SIMILARITY).
HYDROXYLATION (BY SIMILARI:
CHARGE RELAY SYSTEM.
CHARGE RELAY SYSTEM.
CHARGE RELAY SYSTEM.
CHARGE RELAY SYSTEM.
BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GAMMA-CARBOXYGLUTAMIC A
SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 100; DB
Pred. No. 1.2e
9; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                     Craniata; Vo
Catarrhini;
                                                                                                                                                                                                                                                                                            PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 100;
No. 1
 Grant F.J., Saari G.C.
(., Kisiel W., Kurachi
                                                                                                                                                                                                                                                                                            466
                                                                                                                                     Vertebrata;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 1;
.2e-09;
                                                                                                                                                                                                                                                                                            Ą
                                                                                                                       Hominidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SIMILARITY)
                                                                                                                                                                                                        (Serum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 490;
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (POTENTIAL)
                                                                                                                                      Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (POTENTIAL)
                                                                                                                       Homo
                                                                                                                                                                                                        prothrombin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (B)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (BY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (BY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (B)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (B)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (B)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (B)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (BY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (BY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (BY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (BY
                                                                                                                                                                                                                                                                                                                                                                                                                                                   0,;
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
   Zhang E., St Charles A., .....
"Structure of extracellular tissue
inhibited with a BPTI mutant.";
" Mol. Biol. 285:2089-2104(1999).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        [3]
SEQUENCE FROM N.A., AND ...
Ridder M.J., Armel T.Z.,
Ridder M.J., Toth E.J., Yi
                                                                                                                                                                                                                                                   Banner D.W., D'Arcy A., Chene C., Wink
Konigsberg W.H., Nemreson Y., Kirchhof
"The crystal structure of the complex
VIIa with soluble tissue factor.";
Nature 380:41-46(1996).
                                                                                                                                                                                                                                                                                                                                                                                                             first
                                                                                                                                                                                                                                                                                                                                                                                                                                        STRUCTURE OF CARBOHYDRATE ON SER-112.
MEDLINE=91344709; PubMed=2129367;
Iwanaga S., Nishimura H., Kawabata S.,
"A non-tricochiada".
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (Xy12-Glc) O-glycosidically linked to a serine residue in the first epidermal growth factor-like domain of human factors VII and IX and protein Z and bovine protein Z ";
J. Biol. Chem. 264:20320-20325(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STRUCTURE OF CARBOHYDRATE ON SER-112.
MEDLINE-90062160; PubMed-2511201;
MISHIMURA H., Kababata S., Kisiel W., Hase :
Shimonishi Y., Iwanaga S.;
"Identification of a disaccharide (Xy1-Glc)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Bjoern S., Foster D.C., Thim L., Wiberg F.C., Christensen M Komiyama Y., Pedersen A.H., Kisiel W.; "Human plasma and recombinant factor VII. Characterization glycosylations at serine residues 52 and 60 and effects of directed mutagenesis of serine 52 to alanine."; J. Biol. Chem. 266:11051-11057(1991).
                                                                               STRUCTURE BY NMR MEDLINE-98367502;
                                                                                                                                                                                                      X-RAY CRYSTALLOGRAPHY (2. MEDLINE-99126538; PubMed-
                                                                                                                                                                                                                                                                                                                          MEDLINE=96175641; PubMed=8598903;
Banner D.W., D'Arcy A., Chene C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "Amino acid sequence and posttranslational modifications factor VIIa from plasma and transfected baby hamster kidn biochemistry 27:7785-7793(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Poel C.L., Toth E.J., Yi Q., Nickerson D.A.; Submitted (JAN-2002) to the EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      O'Hara P.J.,
                                                 Drakenberg T.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE-91250411;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CARBOHYDRATE-LINKAGE SITES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pedersen A.H., Hedner
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Thim L., Bjoern
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         vitamin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "Nucleotide sequence of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MEDLINE=87260948; PubMed=3037537;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Davie E.W.;
"Characterization
                                                                   Muranyi A.,
                                                                                                                                                                                                                                                                                                                                                             X-RAY CRYSTALLOGRAPHY (2
                                                                                                                                                                                                                                                                                                                                                                                                                               "A new trisaccharide sugar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE-89088153;
                                 "Solution structure
                                                                                                                     [10]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          6
                                                                                                                                                                                                                                                                                                                                                                                                               EGF-like
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      K-dependent pr
atl. Acad. Sci.
                                                                 Finn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61-466,
37:10605-10615(1998)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Grant F
                                                                                                                                                                                                                                                                                                                                                                                                             domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 s.
                                                                                   OF 105-145.
; PubMed-9692950;
                                                                 B.E.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           of a
Sci.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               6, AND POST-TRANSLATIONAL PubMed=3264725;
                                                                                                                                                                                                      APHY (2.1 ANGSTROMS)
Pubmed=9925787;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PubMed=1904059;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    e of the gene coding for human factor VII, a protein participating in blood coagulation."; ci. U.S.A. 84:5158-5162(1987).
                                   0
fi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Christensen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AND VARIANTS THR-352; GLN-413 AND LYS-445. F.Z., Carrington D.P., Chung M.-W., Lee K.I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .J.,
                                                                                                                                                                                                                                                                                                                                                                                             sugar chain linked to
n of clotting factors v
281:121-131(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           cDNA coding for human fac
U.S.A. 83:2412-2416(1986)
                                                                 Gippert
                                 the N-terminal
                                                                                                                                                                                                                                                                                                                                                             .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Carrington D.P., Ch
Q., Nickerson D.A.;
                                                                                                                                                                                      Tulinsky A.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Haldeman
                                                                                                                                                                                                                                                                                                                                                            ANGSTROMS) OF
                                                                                                                                                                                                                                                                                     Kirchhofer F
                                                                 G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .
                                                                                                                                                                                                                                                                                                                            Winkler F.K.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AND SER-120
                                                                                                                                                                      factor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .
A
.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Nicolaisen E.M.,
                                                                 Forsen
                                                                                                                                                                                                                      QF.
                                   EGF-like
                                                                                                                                                                                                                                                                                                                                                                                                                                               Kisiel W.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gray
                                                                                                                                                                                                                                                                                        D.;
blood
                                                                                                                                                                                                                      FVIIA
                                                                                                                                                                                                                                                                                                                                                            FVIIA
                                                                                                                                                                                                                                                                                                                                                                                                             VII
                                                                                                                                                                      complexed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MODIFICATIONS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      and
                                                                 s;
                                                                                                                                                                                                                                                                                                                                                                                                             serine r
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               hamster kidney
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       C.L.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             factor VII.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    databases
                                                                                                                                                                                                                      N
                                   domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   d a trisaccharide residue in the first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ikenaka.
                                                                                                                                                                                                                                                                                        coagulation
                                                                                                                                                                                                                                                                                                                                                            ĭ
                                                                   Stenflo
```

. T:

Takao

of o-

COMPLEX

HTIW

factor

with

from

human

COMPLEX

ΤF

Hase

s:

Ikenaka

residue in and

protein

```
Roberts H.R., Blajchman M., Monroe D.M., High K.A.; "Severe factor VII deficiency caused by mutations abolis cleavage site for activation and altering binding to tis Blood 83:3524-3535(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE=94061028; PubMed=8242057;
Takamiya O., Kemball-Cook G., Marin D.M.A., Cooper Takamiya O., Kemball-Cook G., Marin D.M.A., Cooper von Felten A., Meili E., Hahn I., Prangnell D.R., I Tuddenham E.G.D., McVey J.H.;
"Detection of missense mutations by single-strand cooling polymorphism (SSCP) analysis in five dysfunctional
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "A misse
(115His
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE-91300046; PubMed=2070047; O'Brien D.P., Gale K.M., Anderson J.S., McVey Meade T.W., Tuddenham E.G.D.; "Purification and characterization of factor molecule with reduced activity isolated from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        [11]
VARIANT
                                                                                                                                                                                                                                                                                                       "Topologically equivalent mutations causin factors VII (294Ala-->Val) and X (334Ser--Hum. Mol. Genet. 3:1175-1177(1994).
deficiency
                       Bernardi F., Castaman G., Pinotti M.,
Lunghi B., Rodeghiero F., Marchetti G.
                                                                                        deficiency causes defective Blood 87:5085-5094(1996).
                                                                                                                 Arbini A.A., Mannucci P.M., Bauer K.A., "A Thr359Met mutation in factor VII of
                                                                                                                                                                                                      an amino acid substitution catalytic domain.":
                                                                                                                                                                                                                                                    MEDLINE-95064662; PubMed-7974346;
Ohiwa M., Hayashi T., Wada H., Minamikawa
                                                                                                                                                                                                                                                                                                                                                 Bernardi F., Castaman G., Re
Rodeghiero F., Marchetti G.;
                                                                                                                                                                                                                                                                                                                                                                        VARIANT VAL;354.
MEDLINE=95072589; PubMed=7981691;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Marchetti G., Patracchini P., Gemmati D., Derosa V., Pinot Rodorigo G., Casonato A., Girolami A., Bernardi F.; "Detection of two missense mutations and characterization polymorphism in the factor VII gene (F7).";
         "Mutation
                                                   MEDLINE=97001216;
                                                                 VARIANTS W-283;
                                                                                                                                             MEDLINE=96247510;
                                                                                                                                                            VARIANT MET-419.
                                                                                                                                                                                       Thromb.
                                                                                                                                                                                                   catalytic domain.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE-94264305;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VARIANTS CHARLOTTE GLN-139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE-93372811; PubMed-8364544;
Marchetti G., Ferrati M., Patracc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VARIANT TYR-238.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE=92340074;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VARIANTS GLN-364
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Blood 78:132-140(1991).
                                                                                                                                                                                                                           'Factor VII Mie: homozygous
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     rchetti G., Ferrati M., Patracchini P., Redaelli R., Bernardi missense mutation (178Cys-->Tyr) and two neutral dimorphisms 15His and 333Ser) in the human coagulation factor VII gene.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GLN-364.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Genet.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     factor VII."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     89:497-502(1992).
                                                                 K-325; V-358;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AND
                                                                                                                                                                                   71:773-777(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2:1355-1359(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2:1055-1056(1993).
            ίn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PubMed=1634227;
                                                   PubMed=8844208;
                                                                                                                                             PubMed=8652821;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PubMed=8204879;
            clinically
                                                                                                                                                                                                                                                                                                                                                               Redaelli
                                                                                                                                                                                                              s asymptomatic of His (CAC) 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AND GLN-212
                                                                                                        secretion
                                                               Q-364;
           asymptomatic
                                                                                                                                                                                                                                                                                                                                                               æ
.
                                                                                                                                                                                                                                                                                                                                   causing
                                                               E-402
                                    Ferraresi P.,
                                                                                                        of a
                                                                                                                                                                                                                                                                                                                                                               Pinotti
                                                                                                                                                                                                              type I deficiency for Arg(247) (CGC)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           мсVеу
                                                                                                        patient with
the molecule
                                                                                                                                                                                                                                                     ~.
                                                                                                                                                                                                                                                                                                                                   dysfunctional coagulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a
           coagulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VII 304-Gln: a variant
                                                                                                                                                                                                                                                     Shirakawa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           J.H.,
                                                                                                                                                                                                                                                                                                                                                             Σ,
                                                               Q-413
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     clinically
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   conformational variants of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         r D.N.,
Lumley
                                                                                                                                                                                                                                                                                                                                                                                                                              to tissue factor.";
                                                                                                                                                                                                                                                                                                                                                                                                                                           abolishing the
                                                                                                                                                                                                                                                                                                                                                             Lunghi
                                    di Iasio M.G.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Miller
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pinotti
                                                                                                         .
⊐ ₪
                                                                                                                   hereditary
                                                                                                                                                                                                                                                     S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Vandusen
           factor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              of
a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     unaffected
                                                                                                                                                                                                              caused in the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            G.J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Σ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ŧ
                                                                                                                                                                                                                           γď
```

```
B
                                                                                                                                                                                                                                                                                                                                       Qγ
                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 13
TMG1_HUMAN
                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                              Matches
                                      "Primary Structure and proteins."; gamma-carboxyglutamic acid proteins."; proc. Natl. Acad. Sci. U.S.A. 94:9058-9062(1997).
                                                                                                                                                                                                      15-JUN-2002 (Rel. 41, Created)
15-JUN-2002 (Rel. 41, Last sequence update)
15-JUN-2002 (Rel. 41, Last annotation update)
Transmembrane gamma-carboxyglutamic acid prot
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Hum.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "Ala244Val is a common, probably ancient deficiency in Moroccan and Iranian Jews.' Thromb. Haemost. 76:283-291(1996).
                         -!- TISSUE SPECIFICIAL. ...
-!- PTM: Gla residues are
                                                                                                                                                                                                                                                   TMG1_HUMAN 014668;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             factor VII gene.";
Hum. Mutat. Suppl.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WEDLINE=98112461; PubMed=9452082;
                                                                                    MEDLINE=97404347; PubMed=9256434;
Kulman J.D., Harris J.E., Haldema
                                                                                                                                                     Eukaryota;
                                                                                                                                                                          PRRG1
                                                                                                                                                                                              rich Gla protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Alshinawi C., Scerri
                                                                                                          SEQUENCE FROM N.A.
                                                                                                                              NCBI_TaxID=9606
                                                                                                                                            Mammalia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "Two new missense
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "Ala244Val
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Tamary H., Fromovich
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE=97037613;
                                                                                                                                                                Homo sapiens
                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                                                            CALCIUM.
DISEASE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                TISSUE SPECIFICITY: PLASMA.
PTM: THE VITAMIN K-DEPENDENT,
GLUTAMIC ACID RESIDUES ALLOWS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    produced by alternative TISSUE SPECIFICITY. DIAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FUNCTION: CIRCULATES IN THE BLOOD IN A ZYMOGEN FORM. FACTOR VII CONVERTED TO FACTOR VIIA BY FACTOR XA, FACTOR XIIA, FACTOR IXA, THROMBIN BY MINOR PROTEDLYSIS. IN THE PRESENCE OF TISSUE FACTOR AND CALCIUM IONS, FACTOR VIIA THEN CONVERTS FACTOR X TO FACTOR BY LIMITED PROTEDLYSIS. FACTOR VIIA WILL ALSO CONVERT FACTOR IX FACTOR IX FACTOR IX IN THE PRESENCE OF TISSUE FACTOR AND CALCIUM.

CATALLYTIC ACTIVITY: Hydrolyzes one Arg-1-11e bond in factor X to
          carboxylase
                    modifications
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ALTERNATIVE PRODUCTS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SUBUNIT: HETERODIMER
                                                                                                                                                                                                                                                                                                                                                                                                               PHARMACEUTICAL:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           form factor Xa.
                                                                                                                                                                                                                                                                                                                                       ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFW
                                                                                                                                                                                                                                                                                                                    ANAFLEELRPGSLERECKEEQCSFEEAREIFKDAERTKLFW
                                                                                                                                                                          OR TMG1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A DISULFIDE BOND
                                                                                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 В.,
                                                                                                                                         Eutheria;
                                                                                                                                                                                                                                                                                                                                                                                                       Nordisk).
                                                                                                                                                   Metazoa;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Seligsohn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Paz M., Luder A.S., Blau
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8:108-115(1996).
                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                             DEFECTS
                                                                                                                                                               (Human)
                                                                                                                                                                          0R
                                                                                                                                                                                                                                                               STANDARD;
                                                                                                                                                                                             1) (Proline-rich gamma-carboxyglutamic
                                                                                                                                                                          PRGP1.
                    of glutamic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    mutations
                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESIDUES ALLOWS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PubMed=8883260;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1:S189-S191(1998)
                                                                                                                                          Primates;
                                                                                                                                                   Chordata;
                                                                                                                                                                                                                                                                                                                                                                                                       Used
                                                                                                                                                                                                                                                                                                                                                                                                                 Available
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      U . ;
                                                                                                                                                                                                                                                                                                                                                                        4 4
8 8
                                                                                                                                                                                                                                                                                                                                                                                                                             IN F7 CAN CAUSE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              C
                                                                                                                                                                                                                                                                                                                                                                        .88;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Galdies R.
ons (P134T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 얶
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Shalmon L.,
                                                                                     Haldeman
                               produced
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 splicing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          isoforms; A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A LIGHT CHAIN AND
                                                                                                                                                                                                                                                                                                                                                          Pred. No. 2.66
4; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                       the
                                                                                                                                                                                                                                                                                                                                                                                  Score
                                                                                                                                                                                                                                                                                                                                                                                                                 under
                     acid
                                                                                                                                        Catarrhini; Hominidae;
                                                                                                                                                     Craniata;
                                                                                                                                                                                                                                                               PRT;
                                                                                                                                                                                                                                                                                                                                                                                                      treatment
                                                                                                                                                                                                                                                                                                                                                                                                                                                 THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                 ENZYMATIC CAI
                    by a
                               after subsequent
                                                                                    В.А.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ., Aquilina
and A244V)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Jews.";
                                                                                                                                                                                                                                                                                                                                                                                                                 the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Reich 2.,
                                                                                                                                                                                                                                                                                                                                                                                                                             COAGULOPATHY
                                                                                                                                                                                                                                                               218
                                                                                                                                                                                                                                                                                                                                                                                                     ent of
                     vitamin
                                                                                                                                                     Vertebrata; Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                  ВВ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (shown
                                                                                                                                                                                                         protein 1
                                                                                                                                                                                                                                                                                                                                                             .6e-09;
es 17;
                                                                                    Davie
                                                                                                                                                                                                                                                               Ã
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              mutation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Korostishevsky
                                                                                                                                                                                                                                                                                                                                                                                                                                                           CARBOXYLATION
                                                                                                                                                                                                                                                                                                                                                                                                    s Niastase
f bleeding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    in.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A HEAVY
                                                                                                                                                                                                                                                                                                                    101
                                                                                                                                                                                                                                                                                                                                        41
                                                                                    E.W.;
                                                                                                                                                                                                                                                                                                                                                                                  Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                  PROTEIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           here)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Dym O.
                    K-dependent gamma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    , Felice
the coag
                                                                          novel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             causing
                                                                                                                                                                                                         precursor
                               posttranslational
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   lice A.E.;
coagulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          and
                                                                                                                                                                                                                                                                                                                                                                                  1 466;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CHAIN LINKED
                                          cord
                                                                                                                                                                                                                                                                                                                                                                                                                 or
                                                                                                                                                                                                                                                                                                                                                                                                                                                  TO
                                                                                                                                                                                                                                                                                                                                                                                                      episodes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Lanir
                                                                                                                                                                                              acid
                                                                          proline-rich
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ×
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           В;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     factor X to
                                                                                                                                                                                                                                                                                                                                                                                                      Novoseven
isodes in
                                                                                                                                                                                                                                                                                                                                                                                                                                                 OF S
                                                                                                                                                                                                                                                                                                                                                             0;
                                                                                                                                                                                              protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                           SOME
                                                                                                                                                                                                         (Proline
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              z
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VII
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       · XA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OR
                                                                                                                                                                                                                                                                                                                                                             0
```

EMBL outstation

a collaboration

non-profit institutions as long

as its content

i.s

'n

```
õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TMG4_HUMAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local S
Matches 15
                                                                                                                                                                                                                                                                                                                                             09BZD6;
15-JUN-2002
15-JUN-2002
15-JUN-2002
      This SWISS-PROT entry is copyright. It is produced through a collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         the European Bioinformatics Institute. There are no rest use by non-profit institutions as long as its content modified and this statement is not removed. Usage by an
                                                                                                                         Submitted
                                                                                                                                Strausberg R.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EN the European Bioinformatics Institute. There are no rest
                                                                                                                                              TISSUE-Placenta;
                                                                                                                                                                                 Kulman J.D., Harris J.E., Xie L., Davie E.W.; manna-carboxyglutamic "Identification of two novel transmembrane gamma-carboxyglutamic proteins expressed broadly in fetal and adult tissues."; proc. Natl. Acad. Sci. U.S.A. 98:1370-1375(2001).
                                                                                                                                                                                                                               SEQUENCE FROM N.A. MEDLINE=21117044; PubMed=11171957;
                                                                                                                                                                                                                                                                                Homo sapiens (Human).
Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Primates;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gamma-carboxyglutamic PROPEP 1 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL: AF009242;
HSSP: P00740: 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   entities requires a license agreement (Some send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRINTS; PROODO1; GLABLO SMART; SMOOD69; GLA; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   InterPro; IPR002383; GLA_blood.
InterPro; IPR000294; V1tK_dep_GLA.
Pfam; PF00594; gla; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Genew; HGNC:9469; PRRG1.
                                                                                                                                                                                                                                                                                                                                   fransmembrane
                                                                                                                                                                                                                                                                                                                                                                                               CMG4_HUMAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TRANSMEM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MIM; 604428; -
                                                                                                                                                           EQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                          21
                                                                                            mitted (JUL-2001) to the EMBL/GenBank/DDBJ databases.
SUBCELLULAR LOCATION: Type I membrane protein.
TISSUE SPECIFICITY: Expressed in lung, liver, kidney,
                                                carboxylase.
                                                           modifications
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                          ANGFFEEIRQGNIERECKEEFCTFEEAREAFENNEKTKEFWSTY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PS00011; GLU_CARBOXYLATION; 1. rboxyglutamic acld; Vitamin K; Transmembrane.
                                                                       Gla residues
                                                                                                                                                                                                                                                                                                                          (Rel. 41, Created)
(Rel. 41, Last sequence update)
(Rel. 41, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               21
84
107
Swiss Institute
Bioinformatics 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1CFH
                                                                                                                                                                                                                                                                                                                                                                                              STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAB67070.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GLABLOOD.
                                                            of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      83
106
218
61
135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              218
                                                         s are produced glutamic acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    43.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MW.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score
Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               POTENTIAL.
CYTOPLASMIC (POTENTIAL).
GLA-RICH.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     POLY-PRO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EXTRACELLULAR (POTENTIAL)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         POTENTIAL.
TRANSMEMBRANE GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PROTEIN 1.
                                                                                                                                                                                                                                                                              Craniata; Vertebrata; Euteleostomi; Catarrhini; Hominidae; Homo.
                                                                                                                                                                                                                                                                                                                                                                                              PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ced. No. 1.4e
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         26538A61AB0AEB98 CRC64;
                                                         after subsequent posttranslational by a vitamin K-dependent gamma-
                                                                                                                                                                                                                                                                                                                                                                                              226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1.4e-07;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 1;
                                                                                                                                                                                                                                                                                                                                protein 4
                                                                                                                                                                                                                                                                                                                                                                                             AΑ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 218;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                precursor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             and
                                                                                             pancreas
                     a collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             commercial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       way
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
```

ö

```
RESULT 15
FA7_BOVIN
ID FA7_B
     PRINT REPORTED TO THE PRINT REPORT OF THE PRINT REPORTED TO THE PR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Б
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SQ 971
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local S
Matches 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             P22457;
01-AUG-1991
01-AUG-1991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TRANSMEM
DOMAIN
DOMAIN
                                                                                                                                                                                                 blood coagulation factors VII J. Biochem. 104:867-868(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DOMAIN
SEQUENCE
"A new trisaccharide sugar chain linked to a serine residue its EGF-like domain of clotting factors VII and IX and pro Adv. Exp. Med. Biol. 281:121-131(1990).
                                                                                                                                                                                                                Hase S., Kawabata S., Nishimura H., Takeya H., Sueyoshi Miyata T., Iwanaga S., Takao T., Shimonishi Y., Ikenaka Miyata T., Iwanaga S., Takao T., Shimonishi Y., Ikenaka Manaka T., Iwanaga S., Takao T., Shimonishi Y., Ikenaka T., Rajacham Takao T., Shimonishi Y., Shimonishi Y., Shimonishi Y., Shimonishi Y., Shimonishi Yana Karana Takao T., Shimonishi Yana Karana Takao Tak
                                                                                                                                                                                                                                                                                                                                              MEDLINE=89213999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Bovidae; Bovinae;
NCBI_TaxID=9913;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     15-JUN-2002
Coagulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FA7_BOVIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pfam; PF00594; gla; 1
PRINTS; PR00001; GLAE
SMART; SM00069; GLA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EMBL; AF326351; AAK00956.1; -. EMBL; BC010052; AAH10052.1; -. HSSP; P00740; ICFH.
                                                                                                         MEDLINE=91344709;
                                                                                                                                         STRUCTURE OF CARBOHYDRATE ON SER-52
                                                                                                                                                                                                                                                                                                                                                                           STRUCTURE
                                                                                                                                                                                                                                                                                                                                                                                                                                                        sequence.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Takeya H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Eukaryota;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     entities requires a license agreement (S or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mammalia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Bos taurus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              accelerator).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gamma-carboxyglutamic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    use by non-profit institutions as long modified and this statement is not removed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDLINE-89008362;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PROPEP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Bovine factor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              11 GSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GNLERECNEELCNYEEAREIFVDEDKTIAFWQEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PS00011; GLU_CARBOXYLATION; 1 rboxyglutamic acid; Vitamin K;
                                                                                                                                                                                                                                                                                                                                                                                                                                Chem.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ; Metazoa; Chordata; Craniat
Eutheria; Cetartiodactyla;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IPR000294;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IPR002383; GLA_blood
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Kawabata
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (Rel. i9, Created)
(Rel. 19, Last sequence update)
(Rel. 41, Last annotation update)
factor VII (EC 3.4.21.21) (Seru
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             114
135
135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                      CARBOHYDRATE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       18
50
                                                                                                                                                                                                                                                                                                                                                                                                                          263:14868-14877(1988)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  VII. Its purification
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GLABLOOD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Bos.
                                                                                                                  PubMed=2129367;
                                                                                                                                                                                                                                                                                                                                     Pubmed=3149637;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PubMed=3049594;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      acid;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       s.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Chordata; Craniata; Vertebrata; Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                42.28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VitK_dep_GLA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Nakagawa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        X
X
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        annotation update)
3.4.21.21) (Serum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          POTENTIAL.
CYTOPLASMIC
GLA-RICH.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                POLY-PRO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EXTRACELLULAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PROTEIN 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TRANSMEMBRANE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    POTENTIAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               POTENTIAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     45C783E3825797EE CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       х
;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                84;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Yamamichi Y.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ruminantia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  407
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 1; ...
3.2e-07;
12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Transmembrane;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  complete amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GAMMA-CARBOXYGLUTAMIC
                                                                                                                                                                                                                                                      serine residue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     prothrombin conversion
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pecora; Bovoidea;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Miyata
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               and
                             protein
                                                                                  Lkenaka
                                                                                                                                                                                                                                                      ij
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ior.
                                                                                                                                                                                                                                                      bovine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            in no way
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0
```

```
PRINTS; PR00722; OPRINTS; PR00010; EPRINTS; PR000010; ECSMART; SM00179; ECSMART; SM000001; ECSMART; SM0000001; ECSMART; SM0000001; ECSMART; SM0000001; TI
                DISULFID
                                                                                                                                                                                             ACT_SITE
ACT_SITE
ACT_SITE
BINDING
                                                                                                                                                                                                                                                                                                                          CHAIN
DOMAIN
DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                        PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PROSITE; PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           InterPro;
InterPro;
                                                                                                                                                                                                                                                                                              DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PIR; A31979; A31979.
                                                                                                                                                                                DISULFID
                                                                                                                                                                                                                                                                                                              DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                           EGF-like
                                                                                                                                                                                                                                                                                                                                                                                                                           Hydrolase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                InterPro; IPR000294;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEROPS; S01.215;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              [nterPro;
                                                                                                                                                                                                                                                                                                                                                                                                        iver; Plasma;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SIMILARITY: BELONGS TO PEPTIDASE FAMILY SI SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BY A DISULFIDE BOND.
TISSUE SPECIFICITY: PLASMA.
PTM: THE VITAMIN K-DEPENDENT,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SUBUNIT: HETERODIMER OF A LIGHT CHAIN AND A HEAVY CHAIN LINKED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CATALYTIC ACTIVITY: Hydrolyzes one Arg-|-Ile bond in factor X to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FUNCTION: CIRCULATES IN THE BLOOD IN A ZYMOGEN FORM. FACTOR VII IS CONVERTED TO FACTOR VIIA BY FACTOR XA, FACTOR XIA, FACTOR XIA, OR THROMBIN BY MINOR PROTECLYSIS. IN THE PRESENCE OF TISSUE FACTOR AND CALCIUM IONS, FACTOR VIIA THEN CONVERTS FACTOR X TO FACTOR XA BY LIMITED PROTECLYSIS. FACTOR VIIA WILL ALSO CONVERT FACTOR IX TO FACTOR IX TO TACTOR IX IN THE PRESENCE OF TISSUE FACTOR AND CALCIUM.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GLUTAMIC ACID RESIDUES ALLOWS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       form factor Xa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PF00594; gla; 1.
S; PR00722; CHYMOTRYPSIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PF00089; trypsin; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           P08709;
                                                                                                                                                                                                                                                                                                                                                                                                                                     E; PS00010; ÀSX_HYDROXYL; 1.
E; PS001022; EGF_1; 1.
E; PS01186; EGF_2; 2.
E; PS01187; EGF_CA; 1.
E; PS00011; GLU_CARBOXYLATION; 1
E; PS000134; TRYPSIN_DOM; 1.
E; PS00134; TRYPSIN_SER; 1.
                                                                                                                                                                                                                                                                                                                                                                                           domain;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IPR001438;
IPR002383;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IPR001254;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IPR001881;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IPR001314;
IPR000561;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IPR000152;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IPR000742;
                                                                                                                                                                                                                                                                                                                                                                                                                           Serine protease;
   193
242
344
338
338
17
50
55
55
72
91
114
1159
1178
340
                                                                                                                                                                                                                                                                               153
153
46
46
87
153
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  )10; EGFBLOOD.

)01; GLABLOOD.

)79; EGF_CA; 1.

)1; EGF_like; 1.

59; GLA; 1.

59; GLA; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1BF9
                                                                                                                                                                                                                                                                                                                                                                                                          Vitamin K;
                                                                                                                                                                                                                                                                             Repeat.
152
407
35
82
128
407
153
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Chymotrypsin.
EGF-like.
EGF_2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EGF_Ca.
EGF_II.
GLA_blood.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ser_protease_Try.
VitK_dep_GLA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Asx_hydroxyl.
                                                                                                                                                                                                                                                                                                                                                                                                        e; Blood coagulation; Zymogen; Glycoprotein; Calcium-binding; Gamma-carboxyglutamic acid;
PACTOR IXA, OR THROMBIN).
BY SIMILARITY.
BY SIMILARITY.
BY SIMILARITY.
BY SIMILARITY.
SUBSTRATE (BY SIMILARITY).
BY SIMILARITY.
                                                                                                                                                                                                                                                                                                             GLA-RICH.
EGF-LIKE
EGF-LIKE
                                                                                                                                                                                                                                                                       SERINE PROTEASE.
CLEAVAGE (BY FACTOR XA, FACTOR XIIA,
                                                                                                                                                                                                                                                                                                                                                                          FACTOR
                                                                                                                                                                                                                                                                                                                                                           FACTOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ENZYMATIC CARBOXYLATION OF SOME THE MODIFIED PROTEIN TO BIND
                                                                                                                                                                                                                                                                                                                                                          VII
                                                                                                                                                                                                                                                                                                                            1, CALCIUM-BINDING
                                                                                                                                                                                                                                                                                                                                                          LIGHT CHAIN.
HEAVY CHAIN.
                                                                                                                                                                                                                                                                                                                            (POTENTIAL)
```

```
Вb
                                             Qy
                                                                                                                                                                                                                                  Query Match
Best Local Similarity
Matches 18; Conser
                                                                                                                                                                                                                               MOD_RES
MOD_RES
MOD_RES
MOD_RES
MOD_RES
MOD_RES
MOD_RES
MOD_RES
MOD_RES
CARBOHYD
CARBOHYD
                                                                                                                                                                                                            SEQUENCE
                                                1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFW 41
ANGFLEELLPGSLERECREELCSFEEAHEIFRNEERTROFW
                                                                                                      Conservative
                                                                                                                                                                                                                                                            AA;
                                                                                                                                                                                                                                  44431
                                                                                                                           42.2%;
                                                                                                                                                                                                            WW;
                                                                                                                                                                                                                                                                               GAMMA-CARBOXYGLUTAMIC A
GAMMA-CARBOX A
GAMMA-CARBOX A
GAMMA-CARBOX A
GAMMA-CARBOX A
GAMMA-CARBOX A
GAMMA-CARBOX A
GAMMA-CARBOX
                                                                                                   Score 84; DB
Pred. No. 6.4e
3; Mismatches
                                                                                                                                                                                                         N-LINKED (GLCNAC. . .).
N-LINKED (GLCNAC. . .).
N-LINKED (GLCNAC. . .).
; 703E1FE0636F7F10 CRC64;
                                                                                                                           DB 1; 1
6.4e-07;
                                                                                                        20;
                                                                                                                                                    Length 407
                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                ACID.
ACID.
ACID.
ACID.
ACID.
ACID.
                                                                                                        0;
                                                                                                      Gaps
```

0;

Search completed: May 13, 2003, 14:03:33 Job time: 12 secs

GenCore version 5.1.4_p5_4578 Copyright (c) 1993 - 2003 Compugen Ltd.

```
Title:
Perfect score:
Sequence:
                                                                                                                                                                                                                                                                                                             Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                             Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                           Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        OM protein · protein search, using sw model
                                                                                                                                                                                                                                                                                  Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Scoring table:
                                                                                                                              SPTREMBL_21:*
1: sp_arches:*
2: sp_bacteria:
3: sp_fung1:*
4: sp_human:*
5: sp_inverteb:
6: sp_manmal:*
7: sp_mhc:*
8: sp_organel1:
9: sp_phsge:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       May 13, 2003, 14:01:48; Search time 29 Seconds (without alignments) 312.623 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                             671580 seqs, 206047115 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQ1-EDITED
199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 ANSFLXXLRHgSLXRXCIXX.....XXAKXIFzdVDDTLAFWSKH 44
                                                                                                                                                                                                                             sp_archea:*
sp_bacteria:*
sp_fung1:*
sp_vertebrate:*
sp_unclassified:*
sp_rvirus:*
sp_bacteriap:*
sp_archeap:*
                                                                             sp_plant:*
sp_rodent:*
sp_virus:*
                                                                                                                              sp_organelle:*
sp_phage:*
                                                                                                                                                                                sp_invertebrate:*
sp_mammal:*
                                                                                                                                                                                                                                                                                                                                                                                                                                671580
```

Pred. No. 1s the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result	Score	Query Match [Length DB	BB	ID	Description
1	151	75.9	456	6	Q9TTRO	Q9ttr0 canis famil
N	140	70.4	460	11	Q91WN8	
ω	134	67.3	460	11	Q99PC6	Q99pc6 mus musculu
4	112	56.3	482	11	Q63207	rat
ъ	98	49.2	481	11	054740	O54740 mus musculu
6	98	49.2	481	11	Q99L32	Q99132 mus musculu
7	98	49.2	481	11	088947	088947 mus musculu
8	98	49.2	701	4	Q96PQ8	Q96pq8 homo sapien
9	92	46.2	469	σ	Q9GMD9	Q9gmd9 ornithorhyn .
10	81	40.7	100	4	Q15253	Q15253 homo sapien
11	79	39.7	446	11	Q61109	Q61109 mus musculu
12	79	39.7	650	4	Q9NSD0	Q9nsd0 homo sapien
13	79	39.7	650	4	Q16519	Q16519 homo sapien
14	76.5	38.4	542	ر.	Q8T6I3	Q8t6i3 halocynthia
15	76	38.2	138	σ	Q28994	Q28994 sus scrofa
16	75	37.7	607	13	091001	Q91001 gallus gall

	44	43	42	41	40	39	38	37	36	35	34	ω ω	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
2	Ñ	'n	'n	ώ.	Ü	53.5	ω.	٠.	5		6	σ.			59		63	63		67	69	70	71	71.5	72	74	74	74
26.4	26.4	26.4	•	•	•	26.9		•	-		•	28.4	28.6		•	29.6	•	•	•	•	•	•	•	•	•	37.2	37.2	
543	506	506	431	808	593	567	196	603	575	459	651	606	678	674	674	673	198	179	25	399	808	98	49	433	648	461	461	456
10	10	10	10	10	10	10	10	10	10	10	10	10	4	11	11	11	11	4	二	11	μ W	ü	0	13	6	σ		
Q9MB23	Q9SE23	Q9SPF0	Q94EY5	Q9XF36	Q9LUC3	Q8W4J2	004284	Q9LPG7	Q94E17	Q9SE22	Q8S2I8	Q9SJG9	Q14393	Q63772	Q99K57	Q61592	Q8R182	Q8TAS3	д9ДVН6	Q9CQW3	Q9PTW7	P82807	Q95ME8	Q90YK1	Q29094	Q95ND6	Q95ND7 .	Q14316
ω	ω	0	G	Q9xf36 medicago sa	~	Q8w4j2 arabidopsis	_	Q9lpg7 arabidopsis	~		Q8s218 oryza sativ	9 ara	homo sa	2 rat	7 mus	mus	2 mus	homo sa	ratt		Q9ptw7 struthio ca	P82807 notechis sc	σ	Q90ykl brachydanio	sus	pan	pan t	Q14316 homo sapien

ALIGNMENTS

DR DR DR	DR DR	DR DR	DR DR	DR	38	R 라	RA	RX	RP :	Z Z	R	RT	RA	RA	RP	Z :	o X	88	3 6	2 2	DE	DT	3 :	P A	ij	RESULT Q9TTRO
IPR002383; IPR001254; IPR000294; 100008; EGF; 2	IPR000561; IPR001881;	InterPro; IPR000152; Asx_hydroxyl. InterPro; IPR001314; Chymotrypsin.	HSSP; P04070; 1PCU. MEROPS; S01.218;		-1- SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1; ALSO KNOWN AS THE	"Analysis of canine protein C gene polymorphisms."; Anim. Genet. 30:237-238(1999).	I., Kopp T.	MEDLINE-99371952; PubMed-10443005;	SEQUENCE FROM N.A.	(2) .	protein C gene.";	"Molecular characterization and chromosomal assignment of the canine		Kopp	SEQUENCE FROM N.A.		•	٠.	Chordata: Craniata: Vortobrata:		Protein C precursor.	(TrEMBLrel. 20, Last	(Tremairel 13.	01-MAY-2000 (Transland 13 Orested)	Q9TTRO PRELIMINARY; PRT; 456 AA.	. 1

PF00594; gla; 1. PF00089; trypsin;

```
ALD DAR RRACE OCCUPATION OF RRACE OCCUPATION OCCUPATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DR DR FTT ST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Вþ
Query Match
Best Local Similarity
                                                                                                                    Pfam; PFÓ0008; EGF; 2.

Pfam; PF00008; trypsin; 1.

Pfam; PF00089; trypsin; 1.

Pfam; PF00089; trypsin; 1.

PROSITE; PS00010; ASX_HYDROXYL; UNKNOWN_1.

PROSITE; PS01002; EGF_1; UNKNOWN_1.

PROSITE; PS01187; EGF_CA; UNKNOWN_1.

PROSITE; PS01187; EGF_CA; UNKNOWN_1.

PROSITE; PS00011; GLU_CARBOXYLATION; UNKNOWN_1.

PROSITE; PS000134; TRYPSIN_DOM; 1.

PROSITE; PS000135; TRYPSIN_SER; UNKNOWN_1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRINTS; PRO0722; CHYMOTRYPSIN.
PRINTS; PRO0001; GLABLOOD.
SMART; SM00181; EGF; 2.
SMART; SM00181; EGF; 2.
SMART; SM00089; GLA; 1.
SMART; SM00020; Tryp_SPC; 1.
SMART; SM00020; Tryp_SPC; 1.
PROSITE; PS00010; ASX_HYDROXYL; 1.
PROSITE; PS001186; EGF_1; UNKNOWN_1.
PROSITE; PS01186; EGF_2; 2.
PROSITE; PS00118; EGF_CA; 1.
PROSITE; PS00119; GLU_CARBOXYLATION; 1.
PROSITE; PS00119; GLU_CARBOXYLATION; 1.
PROSITE; PS00114; TRYPSIN_DOM; 1.
PROSITE; PS00114; GLU_CARBOXYLATION; 1.
PROSITE; PS001134; TRYPSIN_DOM; 1.
PROSITE; PS001134; TRYPSIN_DIM; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Q91WN8;
01-DEC-2001 (TrEMBLrel.
01-DEC-2001 (TrEMBLrel.
01-JUN-2002 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CHAIN
                                                                          Hydrolase;
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                           InterPro; IPR000152; Asx_hydroxy1.
InterPro; IPR000561; EGF-like.
InterPro; IPR001881; EGF_Ca.
InterPro; IPR001254; Set_protease_Try.
InterPro; IPR000294; VitK_dep_GLA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Submitted (SEP-2001) to the EMBL; BC013896; AAH13896.1; MGD; MGI:97771; Proc.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similar to protein C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        091WN8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Hydroxylation; SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PROSITE: PS00135; TRYPSIN_SER; 1. Calcium-binding; EGF-like domain; Glycoprotein; Hydroxylation; Repeat; Serine protease; Signal.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Strausberg R
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TISSUE=LIVER;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mus musculus (Mouse)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NCBI_TaxID=10090;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EQUENCE FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               43 ANSFLEEIRAGSLERECMEEICDFEEAKEIFQNVDDTLAYWSKY 86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 l Similarity
28; Conserv
                                                                          Serine |
460 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1
43
193
195
456 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                          protease.; 51818 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          42
192
194
456
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   50813 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     75.9%;
  70.4%;
59.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         to the EMBL/GenBank/DDBJ databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   19,
19,
21,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Created)
Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 151; DB Pred. No. 1.2e 6; Mismatches
Score 140; DB 11;
Pred. No. 9.6e-16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PROTEIN C CONNECTING DIPEPTIDE PROTEIN C HEAVY CHAIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PROTEIN C LIGHT CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     POTENTIAL.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRT;
                                                                          0117F26E68FCC274 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                7AD3A8C1C34E59FF CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1.2e-17;
1.e-17;
1.as 10; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ą
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 456;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Hydrolase;
                       Length 460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0;
```

Q63207 Q63207;

PRELIMINARY;

PRT;

482

A

```
RESULT 4
Q63207
ID Q632
AC Q632
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT
Q99PC6
ID Q9
                                                                            В
                                                                                                 Qy
                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QΥ
                                                                                                                                       Query Match
Best Local
                                                                                                                            Matches
                                                                                                                                                                                                                         SMART; SM00181; EGF; 2.

SMART; SM00001; EGF_1ike; 2.

SMART; SM00000; EGA; 1.

SMART; SM00002; Tryp_SPC; 1.

SMART; SM00020; Tryp_SPC; 1.

PROSITE; PS00010; ASX_HYDROXYL; 1.

PROSITE; PS001186; EGF_2; 2.

PROSITE; PS001186; EGF_2; 2.

PROSITE; PS001187; EGF_CA; 1.

PROSITE; PS00119; GLU_CARBOXYLATION; 1.

PROSITE; PS000134; TRYPSIN_DOM; 1.

PROSITE; PS000134; TRYPSIN_DOM; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Q99PC6
Q99PC6;
01-JUN-2001 (TremBirel 17
01-JUN-2001 (TremBirel 17
01-JUN-2002 (TremBirel 2:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "Complete sequence of UC72A01.";
Submitted (NOY-2000) to the EMBL/GenBank/DDBJ databases.
-!- SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1; ALSO KNOWN AS THE TRYPSIN FAMILY.
EMBL; AF318182; AAK07918.1; -.
HSSP: P04070; IPCU.
                                                                                                                                                                                                 PROSITE; PS00135; TRYPSIN_SER; 1.
Calcium_binding; EGF-like_domain; Glycoprotein;
                                                                                                                                                                                                                                                                                                                                                                 Pfam; PF00008; EGF; 2.
Pfam; PF00594; gla; 1.
Pfam; PF00089; trypsin; 1.
PRINTS; PR00722; CHYMOTRYPSIN.
PRINTS; PR00011; GLABLOOD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mus musculus (Mouse).
Mus musculus (Mouse).
***rvota; Metazoa; Chordata; /
                                                                                                                                                                            Hydroxylation; SEQUENCE 460
                                                                                                                                                                                                                                                                                                                                                                                                                               InterPro: IPR000152; Asx_hydroxyl.
InterPro: IPR001314; Chymotrypsin.
InterPro: IPR001561; EGF-Like.
InterPro: IPR001881; EGF_Ca.
InterPro: IPR001283; GLA_blood.
InterPro: IPR001254; Ser_protease_Try.
InterPro: IPR000294; VitK_dep_GLA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEROPS; S01.218; -.
MGD; MGI:97771; Proc.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A. STRAIN=C57BL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NCBI_TaxID=10090;
                                                                            42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     42
                                                                                                  1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
                                                                          ANSFLEEMRPGSLERECMEETCDLEEAQETFQNVEDTLAFWIKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ANSFLEEMRPGSLERECMEEICDFEEAQEIFQNVEDTLAFWIKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
                                                                                                                            l Similarity
25; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     26;
                                                                                                                                                                            460 AA;
                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                         Repeat;
                                                                                                                                                                            st; Serine protease.
51784 mw; 0293BC25E9D3ED16
                                                                                                                                       67.3%;
56.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      17,
17,
21,
                                                                                                                          Score 134; DB 11
Pred. No. 1.1e-14
7; Mismatches 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Last sequence update)
Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Craniata; Vertebrata; Euteleostomi; Sciurognathi; Muridae; Murinae; Mus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        460
                                                                                                                                                 DB 11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     11;
                                                                                                                                                                            CRC64;
                                                                                                                                                                                                     Hydrolase;
                                                                                                                                                   Length
                                                                                                  44
                                                                          85
                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                    460;
                                                                                                                            0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                           0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
```

```
RESULT
O54740
LD O564740
AC O56
AC O5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  망
                                                                                                                                                                                                                                                                                                                                                     S
                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local S
Matches 18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pfam; PF00594; gla; 1.
Pfam; PF00089; trypsin; 1.
PRINTS; PR00722; CHYMOTRYPSIN.
PRINTS; PR00001; GLABLOOD.
SMART; SM00179; EGF_CA; 1.
SMART; SM00001; EGF_Like; 1.
SMART; SM00001; GGF_LIKe; 1.
SMART; SM000020; Tryp_SPC; 1.
                                                                                                  054740
054740;
01-JUN-1998
01-JUN-1998
01-JUN-2002
Coagulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL; X79807;
HSSP; P00742;
MEROPS; S01.21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                InterPro;
InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      InterPro;
InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Factor X.
Rattus norvegicus (Rat).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-NOV-1996 (TremBLrel.
01-NOV-1996 (TremBLrel.
01-MAR-2002 (TremBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STRAIN-SPRAGUE-DAWLEY;
MEDLINE-96093366; PubMed-8578539;
  Plasmid pBluescript.
Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                              Mus musculus (Mouse).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Hydroxylation;
SEQUENCE 482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Thromb. Res. 80:63-73(1995)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Stanton C., Ross R.P., Hutson S., "Evidence for competition between
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Calcium-binding; EGF-like domain; Glycoprotein; Hydrolase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (nterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         carboxylase."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          for intracellular processing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       [nterPro;
                                                                                                                                                                                                                                                     v
                                                                                                                                                                                                                                                                                                                 41
                                                                                     OR FA10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SIMILARITY: BE
TRYPSIN FAMILY
                                                                                                                                                                                                                                                                                                                                                       ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                 ANSFFEETKKGNLERECVEETCSFEEAREVFEDNEKTTEEWNKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SM00020: Tryp_SPC: 1.

E: PS00010: ASX_HYDROXYL: 1.

E: PS00022: EGF_1: UNKNOWN_1.

E: PS01186: EGF_2: 2.

E: PS01187: EGF_CA: 1.

E: PS00111: GLU_CARBOXYLATION: 1.

E: PS00011: TRYPSIN_DOM: 1.

E: PS00134: TRYPSIN_HIS: UNKNOWN_1.

E: PS00135: TRYPSIN_SER: 1.
                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IPRO00152; Asx_hydroxyl.
IPRO001314; Chymotrypsin.
IPRO00561; EGF-1ike.
IPRO00742; EGF_2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IPR001254; Ser_protease_Try.
IPR000294; VltK_dep_GLA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IPR001881; EGF_Ca
IPR002383; GLA_blood
                                                                                                  (TrEMBLrel. )
(TrEMBLrel. )
(TrEMBLrel. )
factor X pre
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ross R.P.,
                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                            PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1XKA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CAA56202.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Repeat; Serine protease.
AA; 54265 MW; 0284678E3954A698
  Chordata;
Rodentia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Chordata;
Rodentia;
                                                                                                                                                                                                                                                                                                                                                                                                               56.3%;
                                                                                                  el. 06, Created)
el. 06, Last sequence update)
el. 21, Last annotation update)
precursor (EC 3.4.21.6).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             20,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PEPTIDASE
                                                                                                                                                                                                                                                                                                                                                                                                10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Created)
Last sequence up
                                                                                                                                                                                                                                                                                                                                                                                              Score 112; DB
Pred. No. 7.5e
LO; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               γď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Craniata; Vertebrata; Euteleostomi; Sciurognathi; Muridae; Murinae; Rat
  Craniata; Vertebrata; Sciurognathi; Muridae;
                                                                                                                                                                                                            PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                vitamin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Wallin R.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               vitamin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FAMILY
                                                                                                                                                                                                            481
                                                                                                                                                                                                                                                                                                                                                                                                                 DB 11;
.5e-11;
                                                                                                                                                                                                            Ą
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          K-dependent clotting in K-dependent gamma-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     S1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           update)
                                                                                                                                                                                                                                                                                                                                                                                                  16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ALSO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 482;
                                                                                                                                                                                                                                                                                                                 84
                                                                                                                                                                                                                                                                                                                                                                                                Indels
                     Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Murinae; Rattus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KNOWN
    Murinae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AS
                                                                                                                                                                                                                                                                                                                                                                                                0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  tactors
                                                                                                                                                                                                                                                                                                                                                                                                0
```

```
RESULT
Q99L32
 Ş
                                                                                                                                                                                                                                                                                                               Вb
                                                                                                                                                                                                                                                                  Query Match 49.2
Best Local Similarity 36.4
Matches 16; Conservative
                                                                                                                                                                                                                                                                                                                                                   PROSITE: PS00010; ASX_HVDROXYL; UNKNOWN_1.

PROSITE: PS00022; EGF_1; UNKNOWN_1.

PROSITE: PS01186; EGF_2; 2.

PROSITE: PS01187; EGF_CA; 1.

PROSITE: PS00117; GLU_CARBOXYLATION; 1.

PROSITE: PS00134; TRYPSIN_DOM; 1.

PROSITE: PS00134; TRYPSIN_LIST; UNKNOWN_1.

PROSITE: PS00135; TRYPSIN_SER; 1.

Calcium-binding; EGF-1ke domain; Glycoprotein; Hy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                  InterPro; IPR001254; Ser_proteas
InterPro; IPR000294; VitK_dep_Gl
Pfam; PF000008 EGF; 2.
Pfam; PF000594; gla; 1.
Pfam; PF00089; trypsin; 1.
Pfan; PF000722; CHYMOTRYPSIN.
PRINTS; PR000722; CHYMOTRYPSIN.
PRINTS; PR00001; GLABLOOD.
SMART; SM000179 EGF_CA; 1.
SMART; SM00001; EGF_Like; 1.
SMART; SM00001; EGF_Like; 1.
SMART; SM00001; Tryp_SPC; 1.
                                                   Eukaryota; Metazoa; (
Mammalia; Eutheria; I
NCBI_TaxID=10090;
[1]
                                                                                                     Q99L32
Q99L32;
01-JUN-2001
01-JUN-2001
01-JUN-2002
Coagulation
F10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 InterPro;
InterPro;
Strausberg R.;
Submitted (FEB-2001) to
-!- SIMILARITY: BELONGS
TRYPSIN FAMILY.
                                                                                                                                                                                                                                                                                                                                  Repeat; Serine
SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEROPS; S01.216; -. MGD; MGI:103107; F10.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EMBL; AJ222677;
HSSP; P00742; 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE-98454993; PubMed-9783672; Heidtmann H.H., Kontermann R.E.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
TISSUE-LIVER;
                                         SEQUENCE FROM N.A.
                                                                                            Mus musculus
                                                                                                                                                                                                                                                                                                               SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Thromb. Res.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NCBI_TaxID=10090;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             'Cloning and recombinant expression of mouse coagulation factor X.";
                                                                                                                                                                                           5
                                                                                                                                                                                                                            41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TRYPSIN FAMILY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SIMILARITY: BELONGS
                                                                                                                                                                                                                                      ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
                                                                                                                                                                                                                            ANSFFEEFKKGNLERECMEETCSYEEVRETFEDDEKTKEYWTKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IPRO00742; EGF_2.
IPRO01881; EGF_Ca.
IPRO02383; GLA_blood.
IPRO01254; Ser_protease_Try.
IPRO00294; VitK_dep_GLA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IPR000152; Asx_hydroxyl.
IPR001314; Chymotrypsin.
IPR000561; EGF-like.
                                                                                                                                                                                                                                                                                                             41
481 AA;
                                                                                                                           (TrEMBLrel. 17, (TrEMBLrel. 17, (TrEMBLrel. 21,
                                                                                                                   factor
                                                                                                                                                                       PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                92:33-41(1998).
TY: BELONGS TO PEPTIDASE FAMILY S1; ALSO KNOWN AS
                                                                                            (Mouse)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1XKA.
                                                                                                                                                                                                                                                                                                                                            protease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CAA10933.1;
                                                                                                                                                                                                                                                                                                            481 C
53986 MW;
                                                                       Chordata;
Rodentia;
                                                                                                                                                                                                                                                                                                                                     40
                                                                                                                                                                                                                                                                               49.28;
          TO F
                                                                                                                                                                                                                                                                                                                                           Signal
                                                                                                                                                                                                                                                                    10;
          PEPTIDASE FAMILY S1; ALSO KNO
                                                                                                                           Last
Last
                                                                                                                                                  Created)
                                                                                                                                                                                                                                                                               Score
Pred.
                                                                                                                                                                                                                                                                                                                         COAGULATION FACTOR
                                                                                                                                                                                                                                                                                                                                  POTENTIAL
                                                                       Craniata; Vertebrata; I
Sciurognathi; Muridae;
                                                                                                                                                                      PRT;
                                                                                                                                                                                                                                                                                                              CF702DE5EF9D97AE
                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                             sequence up
annotation
                                                                                                                                                                                                                                                                               98;
No.
                                                                                                                                                                      481
                                                                                                                                                                                                                                                                               2e-08;
                                                                                                                                                                                                                                                                                        DB 11;
                                                                                                                                                                       Ą
                                                                                                                           on update)
                                                                                                                                                                                                                                                                     18;
                                                                                                                                                                                                                                                                                                             X.
CRC64;
                                                                                                                                                                                                                                                                                        Length
                                                                                                                                                                                                                                                                                                                                                      Hydrolase;
                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                               44
                                                                                                                                                                                                                                                                     Indels
                                                                                   Euteleostomi;
                                                                        Murinae;
          KNOWN
                                                                                                                                                                                                                                                                                         481;
          AS
                                                                                                                                                                                                                                                                                                                                                        Plasmi
                                                                                                                                                                                                                                                                    0
                                                                         Mus
           THE
                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                        ā
```

0;

MEROPS; S01.216; -. MGD; MGI:103107; F10.

BC003877; P00742; 13 PS; S01.216;

AAH03877.1;

InterPro;

IPR000152;

Asx_hydroxyl.

MEROPS;

```
엉
                                                                                                                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local Similarity
Matches 16; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SMART; SM00181; EGF; 2.

SMART; SM00001; EGF_like; 2.

SMART; SM000001; EGF_like; 2.

SMART; SM000001; TIYP_SPC; 1.

SMART; SM00002; TIYP_SPC; 1.

SMART; SM00020; TIYP_SPC; 1.

PROSITE; PS00010; ASX_HYDROXYL; UNKNOWN_1.

PROSITE; PS001186; EGF_1; UNKNOWN_1.

PROSITE; PS01187; EGF_CA; 1.

PROSITE; PS001187; EGF_CA; 1.

PROSITE; PS001187; EGF_CA; 1.

PROSITE; PS00134; TRYPSIN_HIS; UNKNOWN_1.

PROSITE; PS00135; TRYPSIN_HIS; UNKNOWN_1.

PROSITE; PS00135; TRYPSIN_HIS; UNKNOWN_1.
                                                                                                                                                                                                                                                                               088947;
01-NOV-1998
01-NOV-1998
01-MAR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pfam; PF00089; trypsin; 1.
PRINTS; PR00722; CHYMOTRYPS
PRINTS; PR00010; EGFBLOOD.
PRINTS; PR00001; GLABLOOD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     InterPro;
InterPro;
                                                                                                                                                                                                                                                                                                                                  088947
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pfam;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Pfam; PF00008; EGF;
                                                                                                                           SEQUENCE FROM N.A.
STRAIN-C57BL6 X CBA; TISSUE-LIVER;
MEDLINE-9834793; PubMed-9684791;
Liang Z., Cooper A., DeFord M.E., Carmeliet P.,
Castellino F.J., Rosen E.D.;
                                                                                                                                                                                                                  Mus musculus (Mouse).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              serine protease.
SEQUENCE 481 A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       InterPro;
Cooper A., Liang Z., Castellino F.J., Rosen "Cloning and Characterization of the Murine Thromb. Haemost. 0:0-0(2000).
i- SIMILARITY: BELONGS TO PEPTIDASE FAMILY
                                                   STRAIN=129SJ;
                                                                                                                                                                                                     NCBI_TaxID=10090;
                                                                                                                                                                                                                                                                   Coagulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Calcium-binding;
                                                               SEQUENCE FROM N.A.
                                                                                     Thromb.
                                                                                                    "Cloning and characterization of factor X.";
                                                                                                                                                                                                                                                                                                                                                                                                41
                                                                                                                                                                                                                                                                                                                                                                                                                   1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                ANSFFEEFKKGNLERECMEEICSYEEVREIFEDDEKTKEYWTKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PF00594; gla; 1.
PF00089; trypsin; 1.
S; PR00722; CHYMOTRYPSIN.
                                                                                        Haemost.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IPR001254;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IPR002383;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  IPR000294;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        IPR001438;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    IPR001881;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IPR000742;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IPR001314; Chymotrypsin IPR000561; EGF-like.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                481 AA;
                                                                                                                                                                                                                                                                   (TTEMBLrel. 08, Created)
(TTEMBLrel. 08, Last sequence update)
(TTEMBLrel. 20, Last annotation update)
factor X precursor.
                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                   PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EGF-like domain; Glycoprotein; Hydrolase;
                                                                                        80:87-91(1998)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 54004 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ser_protease_Try.
VitK_dep_GLA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GLA_blood.
                                                                                                                                                                                                                                                                                                                                                                                                                                                           49.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 98; DB 11
Pred. No. 2e-08;
O; Mismatches
                                                                                                                                                                                                                                                                                                                                   PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BD88E96C8A0B7E7F CRC64;
                                                                                                                  Ω,
                                                                                                                  CDNA
                                                                                                                                                                                                                                                                                                                                   481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 11;
                                                                                                               encoding murine coagulation
                                                                                                                                                                                                                                                                                                                                   AA
                           E.D.;
Factor X
   S1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                  18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 481;
                                                                                                                                          Collen
     ALSO KNOWN AS
                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                 84
                            Gene.
                                                                                                                                            .
.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Repeat;
                                                                                                                                                                                                                      Mus
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                   0
```

```
THE COLOR REPORTS THE COLOR RE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT
Q96PQ8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δõ
      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PROSITE; PS00010; ĀSX_HYDROXYL; I
PROSITE; PS00022; EGF_1; UNKNOWN,
PROSITE; PS01186; EGF_2; 2.
PROSITE; PS01187; EGF_CA; 1.
PROSITE; PS00011; GLU_CARBOXYLAT
PROSITE; PS00011; GLU_CARBOXYLAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SMART; SM00179;
SMART; SM00001;
SMART; SM00069;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRINTS;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL;
EMBL;
HSSP;
                                                                                                                                                     "Targeting tissue factor on tumor vascular endothelial cells and tumor cells for immunotherapy in mouse models of prostatic cancer."; proc. Natl. Acad. Sci. U.S.A. 98:12180-12185(2001).
                                                                                                                                                                                                                                                                                                                                                                                                                            01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence upda
01-MAR-2002 (TrEMBLrel. 20, Last annotation up
Factor VII active site mutant immunoconjugate.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q96PQ8 PRELIMINARY;
Q96PQ8;
Q1-DEC-2001 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEROPS; S01.216;
                                                                                         InterPro;
InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ptam;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pfam;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ptam;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             InterPro; IPR001254;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MGD; MGI:103107; F10.
                                              InterPro;
InterPro;
                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A MEDLINE=21477448;
                                                                                                                                                                                                                                                                                                                                                              Eukaryota; Metazoa; Chordata; Mammalia; Eutheria; Primates;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Serine protease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Calcium-binding;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PROSITE; PS00134; TRYPSIN_HIS;
PROSITE; PS00135; TRYPSIN_SER;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SMART;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          InterPro; IPR000294;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    InterPro; IPR002383;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         InterPro; IPR001881;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             InterPro; IPR00074
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    InterPro; IPR000561;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              InterPro;
                                                                                                                                                                                                                                                                                                                                       NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                                                                                                                                       Homo sapiens (Human)
    InterPro;
                                                                                                                                        InterPro;
                           [nterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    œ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       41
L; AF272774; AAK58686.1; -
erpro; IPR000152; Asx.hydroxyl.
erpro; IPR000515; EGF-like.
erpro; IPR000742; EGF_2.
erpro; IPR001881; EGF_Ca.
erpro; IPR003006; Ig_MHC.
erpro; IPR001254; Ser_protease_Try.
erpro; IPR000294; VitK_dep_GLA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TRYPSIN FAMILY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ANSFFEEFKKGNLERECMEEICSYEEVREIFEDDEKTKEYWTKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PF00008; EGF; 2.
PF000594; gla; 1.
PF00089; trypsin; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 P00742; 1XKA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AF087644;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ; PR00722; CHYMOTRYPSIN.
; PR00001; GLABLOOD.
SM000179; EGE_CA; 1.
SM00006; EGE_like; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SM00020;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    IPR001314; Chymotrypsin
IPR000561; EGF-like.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  481 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ), Tryp_SPC; 1.
10; ASX_HYDRXYL; UNK
122; EGF_1; UNKNOWN_1.
126; EGF_2; 2.
127; EGF_CA; 1.
127; Tryp_SPC; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAC36345.1;
AAF22980.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Signal.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; TRYPSIN_SER; 1.
EGF-like domain; Glycoprotein; Hydrolase;
                                                                                                                                                                                                                                                                           PubMed=11593034;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GLU_CARBOXYLATION;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    54018 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GLA_blood.
Ser_protease_Try.
VitK_dep_GLA.
                                                                                                                                                                                                                                                                                                                                                                                     Chordata;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EGF_2.
EGF_Ca.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 49.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Asx_hydroxyl.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  POTENTIAL.
COAGULATION FACTOR X.
, 8AC09DE5EF9D271E CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 98; DB 11
Pred. No. 2e-08;
                                                                                                                                                                                                                                                                                                                                                                Craniata; Vertebrata; Catarrhini; Hominidae.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   UNKNOWN_1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      UNKNOWN_1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               701
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ΑA
                                                                                                                                                                                                                                                                                                                                                                     Hominidae; Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                        update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 481;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                          Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Repeat;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
```

```
В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pfam; PF00008; EGF; 2.

Pfam; PF00049; 9la; 1.

Pfam; PF00049; 19; 2.

Pfam; PF00089; trypsin; 1.

SMART; SM00181; EGF; 2.

SMART; SM00181; EGF; 2.

PROSITE; PS00010; ASX_HYDROXYL; UNKNOWN_1.

PROSITE; PS001186; EGF_1; UNKNOWN_1.

PROSITE; PS01186; EGF_CA: UNKNOWN_1.

PROSITE; PS01187; EGF_CA: UNKNOWN_1.

PROSITE; PS00116; GLU_CARBOXYLATION; UNKNOWN_1.

PROSITE; PS00290; IG_MHC; UNKNOWN_1.

PROSITE; PS00134; TRYPSIN_DSH; UNKNOWN_1.

PROSITE; PS00135; TRYPSIN_SER; UNKNOWN_1.
               Pfam; PF00008; EGF; 2.

Pfam; PF000894; 91a; 1.

Pfam; PF000894; 91a; 1.

Pfam; PF000894; 91a; 1.

Pfam; PF000895; Crypsin; 1.

PRINTS; PR00722; CHYMOTRYPSIN.

PRINTS; PR00722; CHYMOTRYPSIN.

PRINTS; PR000101; EGF; CA; 1.

SMART; SM00179; EGF; CA; 1.

SMART; SM00001; EGF; 1.

SMART; SM000001; EGF; 1.

SMART; SM000000; GLA; 1.

SMART; SM00001; ASX_HYDROXYL; UNKNOPROSITE; PS00186; EGF_1; UNKNOWN_1.

PROSITE; PS01186; EGF_2; 2.

PROSITE; PS01187; EGF_CA; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
  PROSITE; PRO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        O9GMD9 PRELIMINARY;
O9GMD9;
O1-MAR-2001 (TremBLrel.
                                                                                                                                                                                                                                                                                                                                                                InterPro; IPR000742; EGF_2.
InterPro; IPR001881; EGF_Ca.
InterPro; IPR001284; Ser_protease_Try.
InterPro; IPR000294; VitK_dep_GLA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "TRYPSIN FAMILY.

"ROCARSHAR M., Aveskogh M., Munday B., Hellman L.;

"Identification and structural analysis of four serine monotreme, the platypus, Ornithorhynchus anatinus.";

Immunogenetics 52:19-28(2000).

-I- SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1; ALSO KN

TRYPSIN FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           InterPro; IPR000152; Asx_hydroxyl.
InterPro; IPR001314; Chymotrypsin.
InterPro; IPR000561; EGF-like.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EMBL; AF275654; AAG00453.1; HSSP; P00742; 1XKB.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE=21015017; PubMed=11132153;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ornithorhynchus anatinus (Duckbill platypus).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalla; Monotremata; Ornithorhynchidae; Ornithorhynchus.
NCBI_TaxID-9258;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Coagulation factor X.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEROPS;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Hydrolase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ø
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    . Similarity
20; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           S01.216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          701 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Serine protease.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
GLU_CARBOXYLATION;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                49.28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           77826 MW; 94AC6CEB42CC992F CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Created)
Last sequence update)
Last annotation update
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 98; DB . Pred. No. 3.1e 4; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRT;
                                                                                               UNKNOWN_1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   469
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3.1e-08
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 701;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ALSO KNOWN AS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             proteases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
```

```
RR ROCC OS G D D T
                                                                                                                                                                                                밁
                                                                                                                                                                                                                   δõ
                                                                                                                                                              RESULT 11
                                                                                                                                                                                                                                                                                                          RESULT 10
Q15253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                        Query Match
Best Local S
Matches 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                         Q61109 PRELIMINARY;
Q61109;
O1-NOV-1996 (TrEMBLrel 0
01-NOV-1996 (TrEMBLrel 0
01-NOV-1996 (TrEMBLrel 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PROSITE; PS
PROSITE; PS
PROSITE; PS
Hydrolase;
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Q15253;
Q15253;
Q1-NOV-1996
                                      Mus musculus (Mouse).
Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Rodentia;
                                                                                                                                                                                                                                                                                    NON_TER
SEQUENCE
                                                                                                                                                                                                                                                                                                                     Signal.
        SEQUENCE FROM
                                                                                                                                                                                                                                                                                                                                                    Pfam; PF00594; gla; 1.
PRINTS; PR00001; GLABLOOD.
SMART; SM00069; GLA; 1.
                                                                                                                                                                                                                                                                                                                                                                                                         MEDLINE=87182874; PubMed=3471151; macGillivray R.T., Irwin D.M., Guinto macGillivray R.T., Irwin D.M., Guinto "Recombinant genetic approaches to fun Ann. N. Y. Acad. Sci. 485:73-79(1986). EMBL; M33031; AAA60220.1; -. HSSP; P00735; 2PF1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-NOV-1996 (TrEMBLrel. 01, Created)
01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
01-DEC-2001 (TrEMBLrel. 19, Last annotation update)
                                                                          Coagulation factor F7 OR FVII.
                                                                                                                                                                                                                                                                                                          CHAIN
                                                                                                                                                                                                                                                                                                                                         PROSITE; PS00011; GLU_CARBOXYLATION; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Homo sapiens (Human).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
TISSUE-LIVER;
                             NCBI_TaxID=10090;
                                                                                                                                                                                                                                                                                                                                                                                     InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Thrombin
                                                                                                                                                                                                                                                                                                                                                                                               InterPro;
                                                                                                                                                                                           41 ANSLFEELKKGNLERECNEETCSYEEAREVFEDTDKTNEFWN
                                                                                                                                                                                                                  1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             16;
                                                                                                                                                                                                                                         l Similarity
15; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PS50240;
PS00134;
PS00135;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    precursor (Fragment).
                                                                                                                                                                                                                                                                                                                                                                                  IPR000294; VitK_dep_GLA
                                                                                                                                                                                                                                                                                                                                                                                             IPR002383; GLA_blood
                                                                                                                                                                                                                                                                               44
100
100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Serine protease.
469 AA; 52196 MW;
                                                                                   (TrEMBLrel. factor VII.
                                                                                                                                         PRELIMINARY;
                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRELIMINARY;
          N.A
                                                                                                                                                                                                                                                                                    AA;
                                                                                                                                                                                                                                                           43
>100
11302 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TRYPSIN_HIS;
TRYPSIN_SER;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TRYPSIN_DOM;
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Irwin D.M., Guinto E.R.,
                                                                                                                                                                                                                                                  40.78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     46.2%;
                                                                                             01,
01,
21,
                                                                                            Last sequence update)
                                                                                                                                                                                                                                         8
                                                                                                                   Created)
                                                                                                                                                                                                                                        Score 81; DB Pred. No. 3.3e 8; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 92; I
Pred. No. 2
                                                                                                                                                                                                                                                                                                          POTENTIAL.
                                                                                                                                                                                                                                                                                                                   POTENTIAL.
                                        Craniata; Vertebrata;
Sciurognathi; Muridae;
                                                                                                                                         PRT;
                                                                                                                                                                                                                                                                                    FD0E5D0174E1F6FE CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     4C66C230D0758F6A CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     UNKNOWN_1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                       ito E.R., Stone J.C. functional mapping
                                                                                                                                         446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           100
                                                                                                                                                                                                                                                             DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 6;
                                                                                                                                         A
                                                                                                                                                                                                                                                  . se-06;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ą
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2e-07
                                         Muridae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          19;
                                                                                                                                                                                                                                                            Length 100;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 469;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   42
                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                             87
                                                  Euteleostomi;
                                        Murinae;
                                                                                                                                                                                                                                                                                                                                                                                                                                        or.
                                                                                                                                                                                                                                                                                                                                                                                                                                         thrombin.";
                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0
                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                       0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0
```

```
QΥ
Q9NSD0
                                                                                                                                                                                                                                                                                дb
                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local S
                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           InterPro;
InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      rnromb. Haemost. 75:481-487(1996).
-i- SIMILARITY: BELONGS TO PEPTIDASE FAMILY S1;
FMATT TRYPSIN FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE=96276538; PubMed=8701412;
Idusogie E., Rosen E., Geng J.P.,
Castellino F.J.;
                                                                                                                                                                                                                                                                                                                                                                                                           PROSITE: PS00070; ALDEHYDE_DEHYDR_CYS: UNKNOWN_1.

PROSITE: PS00010; ASX_HYDROXYL; UNKNOWN_1.

PROSITE: PS000215; CRYSTALLIN_BETAGAMMA; UNKNOWN_1.

PROSITE: PS00021; EGF_1; UNKNOWN_1.

PROSITE: PS01187; EGF_CA: 1.

PROSITE: PS01187; EGF_CA: 1.

PROSITE: PS00011; GLU_CARBOXYLATION; 1.

PROSITE: PS00134; TRYPSIN_DOM; 1.

PROSITE: PS00134; TRYPSIN_SER; 1.

PROSITE: PS00135; TRYPSIN_SER; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRINTS; PR00722; ČHYMOTRYPSIN
PRINTS; PR00001; GLABLOOD.
SMART; SM000179; EGF_CA; 1.
SMART; SM00001; EGF_Like; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMBL; U44795; AAC52570.1; -. HSSP; P08709; 1FAK.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pfam; PF000594; gla; 1.
Pfam; PF00089; trypsin; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pfam;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEROPS;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "Characterization of a cDNA encoding murine coagulation factor VII.";
                                                                                                                                                            01-OCT-2000 (TrEMBLrel.
01-JUN-2002 (TrEMBLrel.
Protein S precursor.
                                                                                                                                                                                                            Q9NSD0;
                                                                                                                                                                                                                       Q9NSD0
                                                                                                                                                                                                                                                                                                                                                                           Serine protease
SEQUENCE 446 /
                                                                                                                                                                                                                                                                                                                                                                                                 Calcium-binding; EGF-like domain; Glycoprotein; Hydrolase; Repeat;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SMART;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  InterPro; IPR002086;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MGD; MGI:109325; F7.
                    Submitted (FEB-1992) to t. EMBL; X12892; CAA31383.1; HSSP; P00740; 1CFH.
                                                                                                                            Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                    Homo sapiens (Human)
         InterPro;
                                                       Dâhlback B.;
                                                                    Wydro R.,
                                                                               TISSUE=LIVER;
                                                                                          SEQUENCE FROM N.A.
                                                                                                                 NCBI_TaxID=9606;
                                                                                                                                                                                                                                              12
                                                                                                                                                                                                                                                                                42
                                                                                                                                                                                                                                                                                                   1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFW 41
                                                                                                                                                                                                                                                                               ANSLLEELWPGSLERECNEEQCSFEEAREIFKSPERTKQFW 82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PF00008; EGF;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SM00020;
                                                                                                                                                                                                                                                                                                                             18; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           S01.21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    IPR001064; IPR000561;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IPR000152; Asx_hydroxyl.
IPR001314; Chymotrypsin.
IPR001064; Crystallin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        IPR000294;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     IPR001254;
                                                                    Cohen E.,
 IPR000152;
IPR000561;
                                                                                                                                                                                                 (TrEMBLrel.
                                                                                                                                                                                                                        PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                            AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Tryp_SPc; 1.
                                                                                                                             Chordata;
Primates;
                                                                                                                                                                                                                                                                                                                                                                            50318 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ser_protease_Try.
VitK_dep_GLA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Aldehyde_dehydr
                                                                     Dackowski W.,
                                                                                                                                                                                                                                                                                                                                        39.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GLA_blood.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EGF-like.
                                              to the EMBL/GenBank/DDBJ databases
 Asx_hydroxyl
EGF-like.
                                                                                                                                                                           15,
15,
21,
                                                                                                                                                                                                  Created)
                                                                                                                                                                                                                                                                                                                              ω
                                                                                                                                                                           Last sequence update)
Last annotation updat
                                                                                                                                                                                                                                                                                                                              Score 79; DB 11;
Pred. No. 3.8e-05;
3; Mismatches 20
                                                                                                                              Craniata; Ve Catarrhini;
                                                                                                                                                                                                                         PRT;
                                                                                                                                                                                                                                                                                                                                                                            482FD09BEFDA6870 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Carmeliet P.,
                                                                      Stenflo J.,
                                                                                                                                                                                                                         650
                                                                                                                                           Vertebrata; Euteleostomi;
                                                                                                                                                                                                                         AΑ
                                                                                                                                Hominidae;
                                                                                                                                                                           update)
                                                                                                                                                                                                                                                                                                                                 20;
                                                                     Lundwall
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ALSO KNOWN AS THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Collen
                                                                                                                                                                                                                                                                                                                                                    Length 446;
                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       D
                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                 0
```

```
RESULT
Q16519
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         망
    Query Match
Best Local S
Matches 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pfam; PF00594; gla; 1.
Pfam; PF00054; laminin_G; 1.
PRINTS; PR00001; GLABLOOD.
SMART; SM00179; EGF_CA; 3.
SMART; SM00069; GLA; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Q16519;
Q16519;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PROSITE; PS00010; ASX_HYDROXYL;
PROSITE; PS00022; EGF_1; UNNOW
PROSITE; PS01186; EGF_2;
PROSITE; PS01187; EGF_CA; 2.
PROSITE; PS00011; GLU_CARBOXYLA;
PROSITE; PS00011; GLU_CARBOXYLA;
                                                                                                    Pfam; PF00054; gla; 1.
Pfam; PF00054; laminin_G; 1.
Pfam; PF00054; GLABLOOD.
PF1NTS; PR00001; GLABLOOD.
                                                                                                                                                                                                                                                                                                                                                                                                                                          01-NOV-1996 (TrEMBLrel. 01, Created)
01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
01-DEC-2001 (TrEMBLrel. 19, Last annotation update)
Protein S precursor (Fragment)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Calcium-binding;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SMART; SM00282;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Signal.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          InterPro;
                                                                                                                                                                                                                                                                          of blood coagulation.
Proc. Natl. Acad. Sci
                                                                                                                                                                                                                                                                                                                                                                                        Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
PROSITE: PS00010; ASX_HYDROXYL; 3. PROSITE; PS00022; EGF_1; UNKNOWN_1. PROSITE; PS01186; EGF_2; 3. PROSITE; PS01187; EGF_CA; 2. PROSITE; PS01011; GLU_CARBOXYLATION Calcium-binding; EGF-like domain; G
                                                                            SMART; SM00179; EGF_CA;
SMART; SM00069; GLA; 1.
SMART; SM00282; LamG; 2
                                                                                                                                                                                 InterPro;
InterPro;
                                                                                                                                                                                                                                               Proc. Natl. Acad. Sci. U.:
EMBL; M14338; AAA60181.1;
HSSP; P00740; ICFH.
                                                                                                                                                                                                                                                                                                                                                                                                                    Homo sapiens (Human)
                                                                                                                                                                                                                                                                                                                                                                                                                                PROS1
                                                                                                                                                                                                                                                                                                                 Stenflo J., Wydro R.;
                                                                                                                                                                                                                                                                                                                             MEDLINE=86313649; PubMed=2944113;
Lundwall A., Dackowski W., Cohen
                                                                                                                                                                                                                                                                                                                                                                             NCBI_TaxID=9606
                                                                                                                                                                                                                                                                                                                         Lundwall A., Dackowski W.,
                                                                                                                                                                        InterPro;
                                                                                                                                                                                                            InterPro;
                                                                                                                                                                                                                        InterPro;
                                                                                                                                                                                                                                     InterPro;
                                                                                                                                                                                                                                                                                                  Isolation and sequence of the cDNA
                                                                                                                                                                                                                                                                                                                                                      EQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 ANSELXXLRHGSLXRXCIXXICDEXXAKXIF2DVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ANSLLEETKOGNLERECIEELCNKEEAREVFENDPETDYFYPKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PF00008; EGF;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity 34.1 15; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     IPR000294;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IPR001791;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          IPR001881;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              IPR002383;
                                                                                                                                                                      IPR001881; EGF_Ca.
IPR002383; GLA_blood.
IPR001791; Laminin_G.
IPR000294; VitK_dep_GLA.
                                                                                                                                                                                                                        IPR000561;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              650
                                                                                                                                                                                                                        IPR000152; Asx_hydroxyl.
IPR000561; EGF-like.
                                                                                                                                                                                                                                                                          Acad. Sci.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1
16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LamG;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GLU_CARBOXYLATION; 1.
EGF-like domain; Glycoprotein; Hydroxylation; Repeat;
 GLU_CARBOXYLATION; 1.
EGF-like domain; Glycoprotein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             15
650
72480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EGF_Ca.
GLA_blood.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VitK_dep_GLA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         39.7%;
34.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Laminin_G
                                                                                                                                                                                                                                                                          U.S.A. 83:6716-6720(1986)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    UNKNOWN_1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 79; DB
Pred. No. 5.7e
11; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                POTENTIAL.
: C67345ECE8645174 CRC64;
                                                                                                                                                                                                                                                                                                                              Ε.
                                                                                                                                                                                                                                                                                                     for human protein
                                                                                                                                                                                                                                                                                                                               Shaffer M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .7e-05
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ΑA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 650;
      Hydroxylation; Repeat;
                                                                                                                                                                                                                                                                                                                                 Mahr A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                         Ś
                                                                                                                                                                                                                                                                                                         a
                                                                                                                                                                                                                                                                                                                                  Dahlback B.,
                                                                                                                                                                                                                                                                                                         regulator
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0
```

```
RESULT 15
Q28994
  DAC DE RACE DE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SOTTE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local S
Matches 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ouery Match
Best Local Similarity
Matches 15; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Q8T613;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Signal.
NON_TER
SIGNAL
CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Q28994;
Q28994;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.

Wang C.-P., Stafford D.W.;

"Halocynthia roretzi gla-like protein partial genomic DNA sequence.";

Submitted (APR-2002) to the EMBL/GenBank/DDBJ databases.

EMBL; AF466701; AAL74247.2; -.

EMBL; AF466701; AAL74247.2; -.

SEQUENCE 542 AA; 62090 MW; EB9BF13FE42B32FE CRC64;
                                          Submitted (MAR-1996) to the EMBL/GenBank/DDBJ databases EMBL; US1135; AAA96318.1; -. HSSP; P00740; IEDM.
                                                                                                                  SEQUENCE FROM N.A.
TISSUE-LIVER;
Lollar P.;
                                                                                                                                                                                                            Brandstetter H., Bauer M., Huber R., Lollar P., Bode W.;
"X-ray structure of clottling factor IXa: active site and module structure related to Xase activity and hemophilia B.";
Proc. Natl. Acad. Sci. U.S.A. 92:9796-9800(1995).
                                                                                                                                                                                                                                                                                                                                                                                                    Sus scrofa (Pig).

Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalla; Eutherla; Cetartiodactyla; Suina; Suidae; Sus.

NCBI_TaxID=9823;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                01-NOV-1996 (TrEMBLrel. 01, Created)
01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
01-EC-2001 (TrEMBLrel. 19, Last annotation update)
Mature porcine factor IX (Fragment).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-JUN-2002 (TrEMBLrel. 01-JUN-2002 (TrEMBLrel. 01-JUN-2002 (TrEMBLrel. Gla-like protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE
  InterPro;
InterPro;
                                                                                                                                                                                                                                                                                                        TISSUE=LIVER;
MEDLINE=96003866; PubMed=7568220;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Halocynthia roretzi (Sea squirt).
Eukaryota; Metazoa; Chordata; Urochordata; Ascidiacea;
Stolidobranchia; Pyuridae; Halocynthia.
                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NCBI_TaxID=7729;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ü
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           16 ANSLLEETKOGNLERECTEELCNKEEAREVFENDPETDYFYPKY 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        3 SFLXXLRHGSLXRXCIXXICDFXXAKXIFZ-DVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SHFEEIQOGNLERECYEELCSFEEAREVFETNIQDLNEFWAKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            l Similarity
13; Conserv
IPR000152; Asx_hydroxyl.
IPR000561; EGF-like.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1
<1
16
650
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1
15
650
72462 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  38.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     39.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            21,
21,
21,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Created)
Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 76.5; DB 5;
Pred. No. 0.00013;
1; Mismatches 18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 79; DB 4;
Pred. No. 5.7e-05;
1; Mismatches 18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         POTENTIAL.
PROTEIN S.
9A8C044C503BF474 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           542 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AΑ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 650
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 542;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
```

```
Дb
                                                              SQ 511 C
                              Query Match 38.2%;
Best Local Similarity 35.3%;
Matches 12; Conservative
                                                                        NON_TER
SEQUENCE
                                                                                                                                                                  InterPro;
                                                                                                                                                                         InterPro;
                                                                                                                                                                                 InterPro;
                                                                                                                                                                                               InterPro;
                                                                                                                                                                                        InterPro;
                11 GSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
4 GNLERECIEEKCSFEEAREVFENTEKTNEFWKQY
                                                                                                                                                               ; IPR001742; EGF_2.
; IPR001881; EGF_Ca.
; IPR001381; EGF_II.
; IPR0002383; GLA_blood.
; IPR000294; VitK_dep_GLA.
                                                           138
138 AA;
                                                          138
; 15515 MW;
                              Score 76; DB
Pred. No. 3.4e
8; Mismatches
                                                           793BABDE4D5FAFAD CRC64;
                                                                                 Glycoprotein; Repeat
  37
                                             DB 6;
                                     4e-05;
                                            Length 138;
                               Indels
                               0
```

0;

Search completed: May 13, 2003, 14:04:10 Job time: 31 secs

THIS PAGE BLANK (USPTO)

Run

on :

OM protein - protein search, using sw model

GenCore version Copyright (c) 1993 - 2003

5.1.4_p5_4578 Compugen Ltd.

```
is the number of results predicted by chance to have a ater than or equal to the score of the result being printed, rived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     May 13, 2003, 14:03:19; Search time 15 Seconds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ....XXAKXIFzdVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (without alignments)
86.307 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 262574
                                                                                                                                                                      Sequence 4, Appli
Patent No. 5270178
Patent No.
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Patent No.
Sequence
                                                                                                                                                                                                                                                                                           Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence
                                                                                                                                                      ŏ.
                                                                                                                                                                                                                                                                                                       1, Appli
2, Appli
4, Appli
                                                                                                                                                                                                                                                                                                                                                                35, Appli
1, Appli
2, Appli
1, Appli
1, Appli
3, Appli
                                      22, Appl
2, Appli
5. 5270178
                                                                                                                                                        5460953
Appli
Appli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .
\c- ~
                                                                                                                                                                                                                                                                                                                                                                                                                  ٠٥,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ; LENGTH: 44
; TYPE: PRT
; ORGANISM: Homo sapiens
; FEATURE:
; FEATURE:
; NAME/KEY: MOD_RES
; LOCATION: (0)...(0)
; OTHER INFORMATION: Xaa-gamma carboxyglutamic
US-08-955-636-19
                                                                                                                                                                                                                                                                                                           RESULT 2
US-08-955-636-24
                                                                                                                                                                                                                                                                                                                                                                                          В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 1
US-08-955-636-19
                                                    TITLE OF INVENTION: MODIFIED VITAMIN K-DEPENDENT TITLE OF INVENTION: POLYPEPTIDES FILE REFERENCE: 09531/002001
CURRENT APPLICATION NUMBER: US/08/955,636A
CURRENT FILING DATE: 1997-10-23
NUMBER OF SEQ ID NOS: 35
SOFTWARE: FastSEQ for Windows Version 3.0
SEQ ID NO 24
LENGTH: 44
                                                                                                                                                                                                                                 GENERAL INFORMATION: APPLICANT: Nelsestuen,
                                                                                                                                                                                                                                                                       Sequence 24, Application Patent No. 6017882
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SOFTWARE: FastSEQ for Windows Version SEQ ID NO 19 \,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 19, Application Patent No. 6017882
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE OF INVENTION: MODIFIED VITAMIN K-DEPENDENT TITLE OF INVENTION: POLYPEPTIDES FILE REFERENCE: 09531/002001 CURRENT APPLICATION NUMBER: US/08/955,636A CURRENT FILING DATE: 1997-10-23 NUMBER OF SEQ ID NOS: 35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: Nelsestuen,
                  TYPE: PRT
ORGANISM: Homo
  FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    44033654
44033654
44033654
44033654
44033654
                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local Similarity 95.9 es 42; Conservative
                                                                                                                                                                                                                                                                                                                                                                                    1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  410
409
409
139
139
139
139
139
139
139
139
1488
4887
4488
4488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                87.9%;
95.5%;
                                                                                                                                                                                                                                   Gary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gary
                                                                                                                                                                                                                                                                                           US/08955636A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US/08955636A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US:09-667-570A-1
US:09-667-570A-2
US:09-667-570A-2
US:08-955-636-23
US:08-955-636-23
US:08-955-636-2
US:08-487-037-2
US:08-487-037-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 175; DB
Pred. No. 1.2e
1; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ALIGNMENTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB 3;
.2e-22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 44;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               유
                                                                                                                                                                                                                                                                                                                                                                                        44
                                                                                                                                                                                                                                                                                                                                                                                                                            44
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           glutamic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2, Appli
3, Appli
3, Appli
5, 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
```

Result

Score

Query Match

Length

В

G

SUMMARIES

US-08-955-636-24
US-08-955-636-36-1
US-08-955-636-35
US-08-955-636-32-2
US-08-955-411-1

5270178-14 5270178-15

5270178-17 5270178-18

5460953-

US-08-955-636-20 US-08-955-636-25 US-08-955-636-25 US-08-955-636-25 US-08-955-636-25 US-08-745-254A-2 5270178-2

US-08-229-280-5 US-09-065-872-1

and is derived Pred. No. Minimum DB Maximum DB

seq

length:

c

length: 2000000000

Total number

of hits satisfying chosen parameters:

Scoring table: Sequence: Perfect score: Title:

BLOSUM62 Gapop 10.0 ,

Gapext 0.5

262574 seqs,

29422922 residues

SEQ1-EDITED

ANSFLXXLRHGSLXRXCIXX...

Post-processing: Minimum Match 0% Maximum Match 100% Listing.first 45 summaries

Database

Issued_Patents_AA:*

1: /cgn2_6/ptodata/1

2: /cgn2_6/ptodata/1

3: /cgn2_6/ptodata/1

4: /cgn2_6/ptodata/1

5: /cgn2_6/ptodata/1

6: /cgn2_6/ptodata/1

/cgn2_6/ptodata/1/iaa/5A_COMB.pep:*
/cgn2_6/ptodata/1/iaa/5B_COMB.pep:*
/cgn2_6/ptodata/1/iaa/5A_COMB.pep:*
/cgn2_6/ptodata/1/iaa/6B_COMB.pep:*
/cgn2_6/ptodata/1/iaa/BCTUS_COMB.pep:*
/cgn2_6/ptodata/1/iaa/backfiles1.pep:*

Qy

```
; LOCATION: (0)...(0)
; OTHER INFORMATION: Xaa=gamma carboxyglutamic acid or glutamic acid
US-08-955-636-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Дb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-08-955-636-35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 3
                                                                                                                                                                                                                                                                                                                                                                                                                                              US-08-955-636-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-08-955-636-35
                                                                       ; LOCATION: (0)...(0); OTHER INFORMATION: Xaa=gamma carboxyglutamic acid or glutamic acid US-08-955-636-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 3 Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQ ID NO 35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                       SOFTWARE: FastSEQ for Windows Version 3.0 SEQ ID NO 1 \,
                                                                                                                                                                                                                                                                                                                                                                                           GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 1, Application US/08955636A Patent No. 6017882
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
Matches
               Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CURRENT APPLICATION NUMBER: US/08/955,636A CURRENT FILING DATE: 1997-10-23 NUMBER OF SEQ ID NOS: 35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE OF INVENTION: MODIFIED VITAMIN K-DEPENDENT TITLE OF INVENTION: POLYPEPTIDES FILE REFERENCE: 09531/002001
                                                                                                                                                                                                                                                                                                              APPLICANT: Nelsestuen, Gary
TITLE OF INVENTION: MODIFIED VITAMIN K-DEPENDENT
TITLE OF INVENTION: POLYPEPTIDES
FILE REFERENCE: 09531/002001
                                                                                                                                                                                                                                                                             CURRENT APPLICATION NUMBER: US/08/955,636A CURRENT FILING DATE: 1997-10-23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SOFTWARE: FastSEQ for Windows Version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: Nelsestuen, Gary
                                                                                                                                                                                                                                                             NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME/KEY: MOD_RES
LOCATION: (0)...(0)
OTHER INFORMATION: Xaa=gamma carboxyglutamic acid or glutamic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORGANISM: Homo sapiens
                                                                                                                                                                                  LENGTH: 44
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FEATURE:
                                                                                                                             NAME/KEY: MOD_RES
                                                                                                                                                FEATURE:
                                                                                                                                                                 ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LENGTH: 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 ANSFLXXLREGSLXRXCIXXICDFXXAKXIFEDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1 ANSFLXXLRQGSLXRXCIXXICDFXXAKXIFEDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         35, Application US/08955636A
o. 6017882
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                42;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                86.9%;
95.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 86.9%;
95.5%;
                 84.9%;
93.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 173; DB 3;
Pred. No. 2.5e-22;
1; Mismatches 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 173; DB 3; Pred. No. 2.5e-22;
               Score 169; DB 3;
Pred. No. 1.2e-21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
 Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 44;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 44;
                                  Length 4.4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
 0;
```

```
US-08-965-832-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Вþ
밁
                           QУ
                                                                                                                        US-08-965-832-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 2
Patent No.
                                                                         Query Match
Best Local Similarity
                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GENERAL
                                                                                                                                                                                                                                                                                                                                                     INFORMATION FOR SEQ ID NO: SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ZIP: 30309-3450
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE OF INVENTION: NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE/DOCKET NUMBER: ON TELECOMMUNICATION INFORMATION: TELEPHONE: (404)-873-8794
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FILING DATE: 8-NOV-1996
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 60/0
FILING DATE: 25-JUL-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CLASSIFICATION: 530
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CORRESPONDENCE ADDRESS:
                                                                                                                                                                                 FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT:
                                                                                                                                                                                                                                                              FEATURE:
                                                                                                                                                                                                                                                                           MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                        TYPE: amino acid
STRANDEDNESS: Si
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICATION NUMBER: US/08/965,832 FILING DATE: 7-NOV-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SOFTWARE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CITY: Atlanta
                                                                                                                                     LOCATION:
OTHER INFORMATION:
                                                                                                                                                                                                 OTHER INFORMATION: OTHER INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                NAME: Pabst, Patrea L REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ADDRESSEE:
                                                                                                                                                                 NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                     TELEFAX:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICATION NUMBER:
                                                                                                                                                                                                                                  LOCATION:
                                                                                                                                                                                                                                              NAME/KEY:
                                                                                                                                                                                                                                                                                                                                       LENGTH:
                1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
                                                                                                                                                                                                                                                                                             TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ANSFLXXLRHSSLXRXCIXXICDFXXAKXIFQNVDDTLAFWSKH 44
ANSFLXXLRHSSLXRXCIXXICDFXXAKXIFQNVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2, Application US/08965832
5. 5847085
                                                            41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Peachtree Street
                                                                                                                                                                                                                                                                                                                                        45 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2800 One Atlantic Center, 1201 West
                                                                                                                                                                                                                                                                                                                                                                     : (404)
(404)-873-8795
(400) TD NO: 2:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CHARLES T.
                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PatentIn Release #1.0,
                                                                                                                                                                                                                                                                                          ss: single
linear
                                                                                                                                                                                                                                  6, 7,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Floppy disk
                                                                                                                                                                                                                                                                           peptide
                                                                                                                                                                                                                14, 16, 19, 20, 25, 26, 29
N: /note= "where Xaa means
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      T. ESMON AND MIKHAIL D. SMIRNOV modified Protein C
                                                                         84.9%;
93.2%;
                                                                                                                                                                                                 carboxylglutamic
                                                                                                                                      /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               60/053,768
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          08/745,254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Pabst
                                                                                                                                                                                                                                                                                                                                                                                                                                                31,284
                                                                                                                                                                                                                                                                                                                                                                                                                                     OMRE
                                                                         Score 169; DB 2;
Pred. No. 1.2e-21;
                                                                                                                                      "partial sequence of human protein
                                                            Mismatches
                                                                                                                                                                                                 mic acid"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Version
                                                                                                                                                                                                              gamma
                                                                                         Length 45
                              44
                                                              Indels
                                                            0;
                                                              Gaps
```

US-08-295-411-1 RESULT 6

; Sequence 1, Application US/08295411

0,;

```
; LOCATION: 170..419
; OTHER INFORMATION: /r
US-08-295-411-1
      US-08-955-471-1

; Sequence 1, Application US/08955471

; Patent No. 5968751
                                                                                                             밁
                                                                                                                                        á
                                                              RESULT 7
                                                                                                                                                                          Query Match
Best Local Similarity
Matches 32; Conserv
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITLE OF INVENTION: Ser
TITLE OF INVENTION: Ant
TITLE OF INVENTION: for
NUMBER OF SEQUENCES: 10
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME: Fitting, Thomas REGISTRATION NUMBER: 34,163 REFERENCE/DOCKET NUMBER: TSI TELECOMMUNICATION INFORMATION: 619-554-2937
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATTORNEY/AGENT INFORMATION: NAME: Fitting, Thomas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRIOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MOLECULE TYPE: protein HYPOTHETICAL: NO
                                                                                                                                                                                                                                                                                                                      NAME/KEY: Region
LOCATION: 158..169
OTHER INFORMATION: OTHER INFORMATION: I
                                                                                                                                                                                                                                                                                                                                                                                          EATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NTI-SENSE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                          EATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                      NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/793,989
FILING DATE: 18-NOV-1991
CLASSIFICATION: 530
                                                                                                                                                                                                                                                                                                                                                                                                     OTHER INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: US/0
FILING DATE: 22-AUG-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CITY: La Jolla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ADDRESSEE: Office of Patent Counsel, The Scripps
ADDRESSEE: Research Institute
STREET: 10666 No. 5679639th Torrey Pines Road, TPC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TOPOLOGY:
                                                                                                                           1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LENGTH:
                                                                                                            ANSFLEELRHSSLERECIEEICDFEEAKEIFQNVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   92037
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Griffin, John H.
Mesters, Rolf M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      619-554-6312
                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                          Region
1..157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ĕ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   linear
                                                                                                                                                                                         84.98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Serine Protease-Derived Polypeptides and Anti-Peptide Antibodies, Systems and Therapeutic Methods for Inhibiting Coagulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  10
                                                                                                                                                                                                                                                        /note= "Protein C Heavy Chain"
                                                                                                                                                                                                                                                                                                                        Peptide"
                                                                                                                                                                                                                                                                                                                                                                                                     /note= "Protein C Light Chain"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US/08/295,411
                                                                                                                                                                                                                                                                                                                                         /note- "Protein C
                                                                                                                                                                          2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TSRI263.0C1
                                                                                                                                                                                       Score 169; DB 1;
Pred. No. 1.5e-20;
                                                                                                                                                                       Mismatches
                                                                                                                                                                          10;
                                                                                                                                                                                                       Length 419;
                                                                                                                                                                        Indels
                                                                                                                                                                        0;
                                                                                                                                                                        Gaps
                                                                                                                                                                        0,
```

```
LOCATION: 170.419
COTHER INFORMATION: /:
US-08-955-471-1
                                                                                      δ
RESULT 8
US-09-667-570A-3
                                                           Ъ
                                                                                                                      Matches
                                                                                                                                  Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRIOR APPLICATION DATA:
APPLICATION NUMBER:
FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQUENCES: 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TITLE OF INVENTION:
TITLE OF INVENTION:
                                                                                                                                                                                                                                             FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATTORNEY/AGENT INFORMATION: NAME: Fitting, Thomas
                                                                                                                                                                                                                                                                                                                      FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                            TOPOLOGY: linea MOLECULE TYPE: pi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE CHARACTERISTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TELECOMMUNICATION INFORMATION: TELEPHONE: 619-554-2937
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                              ANTI-SENSE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                  PEATURE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STREET: 1
CITY: La
                                                                                                                                                                                                                                                                                                                                 NAME/KEY: Region LOCATION: 1..157 OTHER INFORMATION:
                                                                                                                                                                                                                                                        OTHER INFORMATION: OTHER INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NAME: Fitting, Thomas REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICATION NUMBER: FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADDRESSEE: Office of ADDRESSEE: Research
                                                                                                                                                                                                                                                                                                      NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ZIP: 92037
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STATE:
                                                                                                                                                                                                                                                                                        LOCATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COUNTRY:
                                                          1 ANSFLEELRHSSLERECIEEICDFEEAKEIFQNVDDTLAFWSKH
                                                                                        1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                          amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        419 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       10666 No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    619-554-6312
                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Jolla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Griffin, John H.
Mesters, Rolf M.
                                                                                                                                                                                                                                                                                      Region
158..169
                                                                                                                                                                                                                                                                                                                                                                                                N
O
                                                                                                                                                                                                                                                                                                                                                                                                                                            linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Office of Patent Counsel, The Scripps
                                                                                                                                                                                                                                                                                                                                                                                                                            protein
                                                                                                                                  84.9%;
72.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ch Institute
5968751th Torrey Pines Road, TPC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Serine Protease-Derived Polypeptides and Anti-Peptide Antibodies, Systems and Therapeutic Methods for Inhibiting Coagulation
                                                                                                                                                                                                /note= "Protein C Heavy Chain"
                                                                                                                                                                                                                                                       Peptide"
                                                                                                                                                                                                                                                                      /note= "Protein C Activation
                                                                                                                                                                                                                                                                                                                                  /note- "Protein C Light Chain"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US/08/955,471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         08/295,411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             34,163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      <u>...</u>
                                                                                                                                 Score 169; DB 2;
Pred. No. 1.5e-20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TSRI263.0C1
                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  #1.25
                                                                                                                      10;
                                                                                                                                                Length 419
                                                                                                                      Indels
                                                                                                                      0
                                                                                                                      Gaps
                                                                                                                      0
```

GENERAL INFORMATION:
APPLICANT: Baker, Jeffrey C
APPLICANT: Carlson, Andrew D

Sequence 3, Application US/09667570A Patent No. 6436397

```
20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-667-570A-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PCT-US92-10242-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 1, Application:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQ ID NO 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NUMBER OF SEQ ID NOS: 3
SOFTWARE: PatentIn version 3.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CURRENT APPLICATION NUMBER: US/09/66 CURRENT FILING DATE: 2000-09-21 PRIOR APPLICATION NUMBER: 60/045,255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRIOR FILING DATE: 1997-04-28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Sheliga, Theodore A TITLE OF INVENTION: Improved Methods for Processing Activated Protein FILE REFERENCE: X-11796A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LENGTH: 419
TYPE: PRT
ORGANISM: Homo sapiens
                                                                                                                                                                  NFORMATION FOR SEQ ID NO: 1:
                                                                                                                                                                                                                 NAME: Fitting, Thomas
REGISTRATION NUMBER: 34,163
REFERENCE/DOCKET NUMBER: SC
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITLE OF INVENTION:
TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT:
                                                                                                                               SEQUENCE CHARACTERISTICS:
LENGTH: 419 amino acid
                                                                                                                                                                                                                                                                                                                                                                                                    SOFTWARE: PatentIn Rel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CORRESPONDENCE ADDRESS
                                  FEATURE:
                                                  ANTI-SENSE:
                                                                HYPOTHETICAL:
                                                                              MOLECULE TYPE:
                                                                                                                                                                                                                                                                                   FILING DATE: 18-NOV-1991
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                    PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              UMBER OF SEQUENCES:
NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                   APPLICATION NUMBER: POFILING DATE: 19921118
                                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                 TELEPHONE:
                                                                                                                                                                                                                                                                                                   APPLICATION NUMBER: US 0 FILING DATE: 18-NOV-1991
                                                                                                                                                                                                                                                                                                                                                       CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ADDRESSEE:
                                                                                                     TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 ANSFLEELRHSSLERECIEEICDFEEAKEIFQNVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICATION NUMBER: US/09/667,570A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             92037
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         La Jolla
:: CA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Application PC/TUS9210242
                                                                                                             AMINO ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Huang, Lihua
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          10666 North Torrey Pines Road, TPC 8
                                                                                                                                                                                     619-554-6312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mesters, Roli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                  ö
                                                                                               linear
                                                                                                                                                                                                     619-554-2937
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Office of Patent Counsel, Research Institute
                                                                                 protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Theodore
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              84.98;
72.78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Anti-Peptide Antibodies, S for Inhibiting Coagulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Serine Protease-Derived Polypeptides and
                                                                                                                                                                                                                                                                                                                                                                                                                      Release #1.0, Version #1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                10
                                                                                                                                                                                                                                                                                                                      US 07/793,989
                                                                                                                                                                                                                                                                                                                                                                                      PCT/US92/10242
                                                                                                                                                                                                                                      SCR0472P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 169; DB 4; Pred. No. 1.5e-20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         The Scripps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Systems and Therapeutic Methods
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 419;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0,
```

```
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: prot
US-08-756-506-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            οy
δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 10
US-08-756-506-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PCT-US92-10242-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local Similarity
Matches 32; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Patent No.
                                Matches
                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence
                                                                                                                                                                                INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                       COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                  SEQUENCE CHARACTERISTICS
                                                                                                                                                                                                                                                                   CLASSIFICATION: 800
ATTORNEY/AGENT INFORMATION:
NAME: Sawislak, Deborah
                                                                                                                                                                                                                         TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                             SOFTWARE: PatentIn Release #1.0, Version #1. CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                        COMPUTER: IBM PC
OPERATING SYSTEM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LOCATION: 170..41 OTHER INFORMATION:
                                Local Similarity
nes 32; Conser
                                                                                                                                                                                 TELEPHONE: 200-442-6678
                                                                                                                                                                                                                                         REGISTRATION NUMBER: 37 REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           OTHER INFORMATION: OTHER INFORMATION:
                                                                                                                                                                                                                                                                                                                  FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CITY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OTHER INFORMATION:
                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: US/08/756,506
                                                                                                                                                                                                                                                                                                                                                                                                                                                   COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1 ANSFLEELRHSSLERECIEEICDFEEAKEIFQNVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LOCATION:
 1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                 LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                       98102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Seattle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Application US/08756506
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                E: ZymoGenetics, Inc.
1201 Eastlake Avenue East
                                                                                                                                                 460 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                     USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sprecher, Cindy A.
Prunkard, Donna E.
VENTION: PROTEIN C PRODUCTION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Cottingham, Ian R. Temperley, Simon M. Foster, Donald C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Region
170..419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Region
158..169
                                Conservative
                                                                                                                                                                                                                                                                                                                                                                           IBM PC compatible
SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                             206-442-6672
                                                                                                       protein
                                                                                                                                                                                                                                                                                                                                                                                                        Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ANIMALS
                                              84.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         84.98;
72.78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note= "Protein C Heavy Chain"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Peptide"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note= "Protein C Light Chain"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /note=
                                                                                                                                                                                                                                          95-28
                              Score 169; DB 2;
Pred. No. 1.7e-20;
2; Mismatches 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 169; DB 5; Pred. No. 1.5e-20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "Protein C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Activation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IN TRANSGENIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           :01
                                  10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 419;
                                                          Length 460;
                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                  0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0
                                  0;
```

밁

ANSFLEELRHSSLERECIEEICDFEEAKEIFQNVDDTLAFWSKH

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 11
US-08-756-506-4
                                                            5270178-13
                                                                                                                                                                                                             5270178-13; Patent No.
                                                                                                                                                                                                                                            RESULT 12
                                                                                                                   APPLICANT: GERLITZ, BRUCE E.; GRINNELL, BRIAN W
TITLE OF INVENTION: VECTORS AND COMPOUNDS FOR
ZYMOGEN FORMS OF HUMAN PROTEIN C
NUMBER OF SEQUENCES: 21
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/484,133
                                                                                       SEQ ID NO:13:
                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local Similarity
Matches 32; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 4, Applic Patent No. 5905185
Query Match
Best Local Similarity 72.7
Matches 32; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TELEFAX: 206-442-6678
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ATTORNEY/AGENT INFORMATION:
NAME: Sawislak, Deborah A
REGISTRATION NUMBER: 37,438
REFERENCE/DOCKET NUMBER: 95-2
TELECOMMUNICATION INFORMATION:
TELEPHONE: 206-442-6672
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/756,506
                                                                                                                                                                                                                                                                                                                                                                                                                       MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE OF INVENTION: PROTEIN C PRODUCTION IN TRANSGENIC TITLE OF INVENTION: ANIMALS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: Sprecher, Cindy A. APPLICANT: Prunkard, Donna E.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                        43
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STREET: 1201 | CITY: Seattle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COUNTRY: U:
ZIP: 98102
                                                                                                                                                                                                                                                                                                                                                                                                                                        TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ADDRESSEE:
                                                                            LENGTH: 460
                                                                                                                                                                                                                                                                                   LENGTH:
                                                                                                                                                                                                             5270178
                                                                                                                                                                                                                                                                                                                                                                                                                                                     H: 460 amino acids amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Æ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Application US/08756506
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 E: ZymoGenetics, Inc
1201 Eastlake Avenue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       USA
                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Cottingham, Ian R. Temperley, Simon M. Foster, Donald C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Garner,
                                                                                                                                                                                                                                                                                                                                                                                                                                        linear
                                                                                                      23-FEB-1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        800
                                                                                                                                                                                                                                                                                                                                                            84.98;
               84.98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              25.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   4.
   2
                                                                                                                                                                                                                                                                                                                                            Score 169; DB 2;
Pred. No. 1.7e:20;
2; Mismatches 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             95-28
 Score 169; DB 6;
Pred. No. 1.7e-20;
2; Mismatches 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   East
                                                                                                                                                                               W.
R EXPRESSION
                                                                                                                                                                                                                                                                                                                                                10;
   10;
                             Length 460;
                                                                                                                                                                                                                                                                                                                                                                          Length 460;
   Indels
                                                                                                                                                                                                                                                                                                                                              Indels
   0;
                                                                                                                                                                                                                                                                                                                                              0
 Gaps
                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                              0;
   0
```

```
γ
                                                                                                                                                                                                                                                                                   RESULT 15
5270178-16
;Patent No. 5270178
                                                                                                                                                                                                                                                                                                                                                                                                         δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δã
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                    5270178-16
                                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               5270178-15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICATION NUMBER: US/07/484,133; FILING DATE: 23-FEB-1990; SEQ ID NO:15:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 14
5270178-15
; Patent No. 5270178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5270178-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PATENT NO. 5270178

APPLICANT: GERLITZ, BRUCE E.; GRINNELL, BRIAN W.
TITLE OF INVENTION: VECTORS AND COMPOUNDS FOR EXPRESSION OF
ZYMOGEN FORMS OF HUMAN PROTEIN C
NUMBER OF SEQUENCES: 21
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 13
5270178-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: GERLITZ, BRUCE E.; GRINNELL, BRI
TITLE OF INVENTION: VECTORS AND COMPOUNDS
ZYMOGEN FORMS OF HUMAN PROTEIN C
NUMBER OF SEQUENCES: 21
CURRENT APPLICATION DATA:
                                                                                                                                                                                                 APPLICANT: GERLITZ, BRUCE E.; GRINNELL, BRIAN W.
TITLE OF INVENTION: VECTORS AND COMPOUNDS FOR EXPRESSION OF
2XMOGEN FORMS OF HUMAN PROTEIN C
NUMBER OF SEQUENCES: 21
CURRENT APPLICATION DATA:
                                                                                                                                                SEQ ID NO:16:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQ ID NO:14:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local S
Matches 32
                                               Query Match
Best Local Similarity
Matches 32; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Similarity 72.7
Matches 32; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                  LENGTH: 460
                                                                                                                                                                APPLICATION NUMBER: FILING DATE: 23-FEB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local Similarity 72.7 hes 32; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICATION NUMBER: US/07/484,133 FILING DATE: 23-FEB-1990
                                                                                                                                                                                                                                                                                                                                                                       43 ANSFLEELRHSSLERECIEEICDFEEAKEIFQNVDDTLAFWSKH 86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LENGTH: 460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LENGTH: 460
                                                                                                                                                                                                                                                                                                                                                                                                       1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH
ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ANSFLEELRHSSLERECIEEICDFEEAKEIFQNVDDTLAFWSKH 86
                                               Conservative
                                                                                                                                                                   23-FEB-1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     84.98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                        84.98;
72.78;
                                                               84.98;
                                                                                                                                                                                   US/07/484,133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 169; DB 6;
Pred. No. 1.7e-20;
2; Mismatches 10
                                             Score 169; DB 6;
Pred. No. 1.7e-20;
2; Mismatches 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 169; DB 6; Pred. No. 1.7e-20
                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BRIAN W.
                                                                                                                                                                                                                                                                                                                                                                                                                                          10;
                                                                               Length 460;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 460;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 460;
                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 44
                                               0;
                                                                                                                                                                                                                                                                                                                                                                                                                                          0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
```

0

0;

밁

ANSFLEELRHSSLERECIEEICDFEEAKEIFQNVDDTLAFWSKH 86

Search completed: May 13, 2003, 14:07:23
Job time : 16 secs

```
Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                 Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9
::
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      seq
seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Published_Applications_AA:*

1: /cgn2_6/ptcodata/2/pubpaa/VS08_NEW_PUB.pep:*

2: /cgn2_6/ptcodata/2/pubpaa/PCT_NEW_PUB.pep:*

3: /cgn2_6/ptcodata/2/pubpaa/US06_NEW_PUB.pep:*

4: /cgn2_6/ptcodata/2/pubpaa/US07_NEW_PUB.pep:*

5: /cgn2_6/ptcodata/2/pubpaa/US07_NEW_PUB.pep:*

6: /cgn2_6/ptcodata/2/pubpaa/US07_PUBCOMB.pep:*

7: /cgn2_6/ptcodata/2/pubpaa/US07_PUBCOMB.pep:*

8: /cgn2_6/ptcodata/2/pubpaa/US09_PUBCOMB.pep:*

9: /cgn2_6/ptcodata/2/pubpaa/US09_NEW_PUB.pep:*

10: /cgn2_6/ptcodata/2/pubpaa/US09_PUBCOMB.pep:*

11: /cgn2_6/ptcodata/2/pubpaa/US10_NEW_PUB.pep:*

12: /cgn2_6/ptcodata/2/pubpaa/US10_NEW_PUB.pep:*

13: /cgn2_6/ptcodata/2/pubpaa/US10_NEW_PUB.pep:*

14: /cgn2_6/ptcodata/2/pubpaa/US10_NEW_PUB.pep:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BLOSUM62
Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         May 13, 2003, 14:04:14; Search time 19 Seconds (without alignments) 213.112 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                             Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQ1-EDITED
                                                                                                                                                                                                                                                                                                                                                                                                               Query
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    349150 segs,
           ANSFLXXLRHgSLXRXCIXX.....XXAKXIFzdVDDTLAFWSKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              : /cgn2_6/ptodata/2/pubpaa/US07_PUBCOMB.pep:*
    /cgn2_6/ptodata/2/pubpaa/US07_PUBCOMB.pep:*
    /cgn2_6/ptodata/2/pubpaa/US08_PUBCOMB.pep:*
    /cgn2_6/ptodata/2/pubpaa/US08_PUBCOMB.pep:*
    /cgn2_6/ptodata/2/pubpaa/US09_PUBCOMB.pep:*
    /cgn2_6/ptodata/2/pubpaa/US10_NEW_PUB.pep:*
    /cgn2_6/ptodata/2/pubpaa/US10_NEW_PUB.pep:*
    /cgn2_6/ptodata/2/pubpaa/US10_NEW_PUB.pep:*
    /cgn2_6/ptodata/2/pubpaa/US10_NEW_PUB.pep:*
    /cgn2_6/ptodata/2/pubpaa/US0_PUBCOMB.pep:*
    /cgn2_6/ptodata/2/pubpaa/US0_NEW_PUB.pep:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GenCore version 5.1.4_p5_4578 Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                               Length
           4119
4061
4061
4061
4061
4061
4061
4061
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    92025710 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gapext 0.5
             US-10-182-263-6
US-10-182-263-1
US-09-978-917A-2
US-10-182-263-2
US-10-182-263-2
US-09-978-917A-2
US-09-759-1308-313
US-10-189-123-43
US-09-759-1308-312
US-09-759-1308-312
US-09-759-1308-312
US-09-759-1308-310
US-09-759-1308-310
US-10-189-123-42
US-10-189-123-42
US-10-189-123-42
US-10-189-123-42
US-10-189-123-42
US-10-189-123-42
US-10-189-123-42
                                                                                                                                                                                                                                                                                                                  US-10-182-263-3
US-10-182-263-4
US-10-182-263-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                       SUMMARIES
Sequence 3, Appli
Sequence 5, Appli
Sequence 5, Appli
Sequence 6, Appli
Sequence 1, Appli
Sequence 2, Appli
Sequence 2, Appli
Sequence 3, Appli
Sequence 313, Appl
Sequence 43, Appl
Sequence 43, Appl
Sequence 310, Appl
Sequence 310, Appl
Sequence 5, Appli
Sequence 3, Appli
Sequence 3, Appli
Sequence 3, Appli
                                                                                                                                                                                                                                                                                                                                                                                           Description
```

Sequence 12, Appli Sequence 2, Appli Sequence 2, Appli Sequence 2, Appli Sequence 2, Appli Sequence 2, Appli Sequence 6, Appli Sequence 6, Appli Sequence 192, App Sequence 34, Appli Sequence 34, Appli	9 US-10-100-405A-2 10 US-09-919-408-6 11 US-09-766-678-2 10 US-09-872-136-6 10 US-09-801-368-192 10 US-09-836-392-34 10 US-09-836-392-34 10 US-09-872-523-9 ALIGNMENTS		100 100	21.6		
e 34	US-10-100-405A- US-09-919-408 US-09-766-678 US-09-872-136- US-09-801-368 US-09-882-610- US-09-836-392-3 US-09-872-523		104	21.6		
9 0 12 9 0 0 12 9 0 12 9 0 12	US-10-100-405A US-09-919-408- US-09-766-678- US-09-872-136- US-09-801-368- US-09-982-610- US-09-836-392-3		4 2 U 4		43	4 5
e e e e e e e e e e e e e e e e e e e	US-10-100-405A- US-09-919-408- US-09-766-678- US-09-801-368- US-09-801-368- US-09-982-610-		Q1 V2	21.9	43.5	44
0 12 0 2, 0 6, 0 6 12	US-10-100-405A- US-09-919-408- US-09-766-678- US-09-872-136- US-09-801-368-		4 9	22.1	44	43
e e e 2 , 1	US-10-100-405A-2 US-09-919-408-6 US-09-766-678-2 US-09-872-136-6		2	22.4	44.5	42
e 2, 2, 1	US-10-100-405A-2 US-09-919-408-6 US-09-766-678-2		136	23.6	47	41
e 2, 2, 1	US-10-100-405A- US-09-919-408-		136	23.6	47	40
2, 2, 1;	US-10-100-405A-		136	23.6	47	39
e 1;			135	ω.	47	38
e 1:	US-10-022-939-2		135	23.6	47	37
<u> </u>	_		135	23:6	47	36
111111111111			36	23.6	47	35
ന			36	23.6	47	34
	US-09-939-833-12	7 9	36	23.6	47	33
Sequence 5,		7 10	31	23.6.	47	32
ū	US-09-939-7		31	23.6	47	.31
Sequence 5, Appli		7 9	31	23.6	47	30
ი ი	0 US-09-766-678-6		1.8	23.6	47	29
Sequence 2, Appli	US-09-375-248-2	ω 9	136	24.1	48	28
Sequence 33,		8 10	129	24.1	48	
O			34	24.1	48	26
_	248-1		136	4.	49	
Sequence 83,	US-10-189-123-83		22	2	64	
Sequence 353	US-09-759-130B-353		22		64	
85	US-10-189-123-85	9	208	32.2	64	22
	US-09-759-130B-355		20	2	64	21
Sequence 86,	US-10-189-123-86	9	9	32.2	64	20

```
US-10-182-263-4
; Sequence 4, Application US/10182263
; Publication No. US20030022354A1
; GENERAL INFORMATION:
; APPLICANT: Gerlitz, Bruce E
; APPLICANT: Jones, Bryon E
; APPLICANT: Grinnell, Brian W
; TITLE OF INVENTION: PROTEIN C DERIVA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 3, Application US/10182263
Publication No. US20030022354A1
GENERAL INFORMATION:
APPLICANT: Geriitz, Bruce E
APPLICANT: Jones, Bryan E
APPLICANT: Grinnell, Brian W
TITLE OF INVENTION: PROTEIN C DERIVATIVES
FILE REFERENCE: X-13611
CURRENT APPLICATION NUMBER: US/10/182,263
CURRENT FILING DATE: 2002-07-22
PRIOR APPLICATION NUMBER: 60/181948
PRIOR FILING DATE: 2002-02-11
PRIOR APPLICATION NUMBER: 60/18199
PRIOR FILING DATE: 2000-03-14
NUMBER OF SEO ID NOS: 12
                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                          US-10-182-263-3
                                                                                                                                                                                                                                                                                                         Query Match
Best Local S
Matches 34
                                                                                                                                                                                                                                                                                                                                                                                                       SOFTWARE: PatentIn version 3.1
SEQ ID NO 3
LENGTH: 419
TYPE: PRT
ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                         Local Similarity 77.3 les 34; Conservative
                                                                                                                                                                                                                         CANT: Jones, Bryan E
CANT: Grinnell, Brian W
OF INVENTION: PROTEIN C DERIVATIVES
                                                                                                                                                                                                                                                                                                                           91.0%;
77.3%;
                                                                                                                                                                                                                                                                                                       Score 181; DB 9; L
Pred. No. 1.6e-22;
"""matches 9;
                                                                                                                                                                                                                                                                                                                                                Length 419;
                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                           0
                                                                                                                                                                                                                                                                                                         Gaps
```

0

US-10-132-829-5 US-09-884-901-3

PRIOR APPLICATION NUMBER: 60/181948 PRIOR FILING DATE: 2002-02-11

60/189199

FILE REFERENCE: X-13611
CURRENT APPLICATION NUMBER: US/10/182,263
CURRENT FILING DATE: 2002-07-22

```
Ωy
                                                                                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; TYPE: PRT ; ORGANISM: Homo sapiens US-10-182-263-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                    US-10-182-263-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-10-182-263-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ORGANISM: Homo sapiens US-10-182-263-4
                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local S
Matches 34
                                                                                                                                                                              Sequence 6, Application US/10182263 Publication No. US20030022354A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 5, Application US/10182263 Publication No. US20030022354A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQ ID NO 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Publication No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQ ID NO 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: JONES, Bryan E
APPLICANT: Grinnell, Brian W
TITLE OF INVENTION: PROTEIN C DERIVATIVES
FILE REFERENCE: X-13611
                CURRENT APPLICATION NUMBER: US/10/182,263
CURRENT FILING DATE: 2002-07-22
PRIOR APPLICATION NUMBER: 60/181948
PRIOR FILING DATE: 2002-02-11
                                                                                                       APPLICANT: Grinnell, Brian W
TITLE OF INVENTION: PROTEIN C DERIVATIVES
                                                                                        FILE REFERENCE: X-13611
                                                                                                                                          APPLICANT: Gerlitz, Bruce E
APPLICANT: Jones, Bryan E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SOFTWARE: PatentIn version 3.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR FILING DATE: 2000-03-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR APPLICATION NUMBER: 60/181948 PRIOR FILING DATE: 2002-02-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CURRENT FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: Gerlitz,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SOFTWARE: PatentIn version 3.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NUMBER OF SEQ ID NOS: 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NUMBER OF SEQ ID NOS: 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRIOR APPLICATION NUMBER: 60/
PRIOR FILING DATE: 2000-03-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LENGTH: 419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                  Local Similarity
                                                                                                                                                                                                                                                                                                            ب
                                                                                                                                                                                                                                                                                                                             1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 ANSFLEELRHGSLERECIEEICDFEEAKEIFEDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                        ANSFLEELRHGSLERECIEEICDFEEAKEIFEDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICATION NUMBER: US/10/182,263
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             419
                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Bruce
                                                                                                                                                                                                                                                                                                                                                                                                91.0%;
77.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2002-07-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                91.0%;
77.3%;
60/189199
                                                                                                                                                                                                                                                                                                                                                                                                Score 181; DB 9;
Pred. No. 1.6e-22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 181; DB 9;
Pred. No. 1.6e-22;
                                                                                                                                                                                                                                                                                                                                                                               Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                             Length 419;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 419;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                               0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0;
                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                               0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
```

```
; ORGANISM: Homo sapiens US-09-978-917A-4
                                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local Similarity
Tatches 32; Conserve
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Qy
                                                                                                                                                                                                                                                                                                                                        US-09-978-917A-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-10-182-263-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-10-182-263-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local S
Matches 33
                    Query Match
Best Local :
                                                                                                                                             SOFTWARE: PatentIn Ver. 2.1 SEQ ID NO 4
                                                                                                                                                                                                                                                                                    GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                 Sequence 4, Application US/09978917A publication No. US20030027299A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SOFTWARE: PatentIn version 3.1 SEQ ID NO 1
   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence I, Application US/1018 Publication No. US20030022354A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQ ID NO 6
                                                                                                                                                                                           FILE REFERENCE: 0219us310 - protein C
CURRENT APPLICATION NUMBER: US/09/978,917A
CURRENT FILING DATE: 2001-10-17
                                                                                                                                                                                                                                                APPLICANT: Maxygen Aps; Maxygen Holdings
TITLE OF INVENTION: Protein C or activated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NUMBER OF SEQ ID NOS: 12
SOFTWARE: PatentIn version 3.1
                                                                                                                                                                                NUMBER OF SEQ ID NOS: 48
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR FILING DATE: 2002-0 PRIOR APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: Jones, Bryan E
APPLICANT: Grinnell, Brian W
TITLE OF INVENTION: PROTEIN C DERIVATIVES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRIOR FILING DATE: 2000-03-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRIOR APPLICATION NUMBER: 60/181948
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CURRENT APPLICATION NUMBER: US/10/182,263
CURRENT FILING DATE: 2002-07-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FILE REFERENCE: X-13611
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: Gerlitz,
                                                                                                          TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: PRT
ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LENGTH: 419
TYPE: PRT
                                                                                                                          LENGTH: 419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LENGTH: 419
                  Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local Similarity
mes 33; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                            1 ANSFLEELRHSSLERECIEEICDFEEAKEIFONVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                           1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ANSFLEELROGSLERECIEEICDFEEAKEIFEDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
 l Similarity
32; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Application US/10182263
84.98; ilarity 72.78; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2002-02-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                84.98;
72.78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   86.9%;
75.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               60/189199
Score 169; DB 9;
Pred. No. 1.7e-20;
2; Mismatches 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 169; DB 9;
Pred. No. 1.7e-20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 173; DB 9;
Pred. No. 3.6e-21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                  protein C-like molecules
   10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 419;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 419;
                                  Length 419
 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0;
```

밁

ANSFLEELRHSSLERECIEEICDFEEAKEIFQNVDDTLAFWSKH 44

```
RESULT 9
US-10-109-498-1
                                                                                     g
                                                                                                                                                                                                                       ; NAME/KEY: CHAIN
; LOCATION: (43)...(461)
US-09-978-917A-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-10-182-263-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-09-978-917A-2
                                                                                                                                                                                                                                                                                                                                                                                           NUMBER OF SEQ ID NOS: 48
SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 2
Sequence 1, Application US/10109498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 2, Application US/09978917A Publication No. US20030027299A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local S
                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQ ID NO 2
                                                                                                                                                                                     Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 2, Application US/10182263 Publication No. US20030022354A1
                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Maxygen Aps: Maxygen Holdings
TITLE OF INVENTION: Protein C or activated protein C-like molecules
FILE REFERENCE: 0219us310 - protein C
CURRENT APPLICATION NUMBER: US/09/978,917A
CURRENT FILING DATE: 2001-10-17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Grinnell, Brian W
TITLE OF INVENTION: PROTEIN C DERIVATIVES
FILE REFERENCE: X-13611
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRIOR APPLICATION NUMBER: 60/189199
PRIOR FILING DATE: 2000-03-14
NUMBER OF SEQ ID NOS: 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SOFTWARE: PatentIn version 3.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRIOR APPLICATION NUMBER: 60/PRIOR FILING DATE: 2002-02-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CURRENT APPLICATION NUMBER: US/10/182,263
CURRENT FILING DATE: 2002-07-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Gerlitz, Bruce
APPLICANT: Jones, Bryan |
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LENGTH: 461
TYPE: PRT
ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                          ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                           NAME/KEY: SIGNAL
                                                                                                                                                                                                                                                                                                                                                                          LENGTH: 461
                                                                                                                                                                                                                                                                                         OCATION: (1)...(42)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     3
                                                                                                                                                     Local Similarity
nes 32; Conserv
                                                                                                       1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                   ANSFLEELRHSSLERECIEEICDFEEAKEIFQNVDDTLAFWSKH 86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Jones, Bryan E
                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                    84.98;
72.78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           84.98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   60/181948
                                                                                                                                                    Score 169; DB 9;
Pred. No. 1.9e-20;
2; Mismatches 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 169; DB 9; Pred. No. 1.9e-20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                                                                                                                                     10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 461;
                                                                                                                                                                                    Length 461;
                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0
```

```
B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-10-109-498-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 10
US-09-759-130B-313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQ ID NO 1
LENGTH: 406
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: Goodearl, Andre APPLICANT: Holtzman, Dougl TITLE OF INVENTION: NOVEL GOOD TITLE OF INVENTION: USES.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Similarity
Matches 29; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Publication No. US20030044908A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 313, 7
Publication No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR FILING DATE: 2001-04-03
PRIOR APPLICATION NUMBER: PA 2001 00477
PRIOR FILING DATE: 2001-03-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CURRENT APPLICATION NUMBER: US/10/109,498
CURRENT FILING DATE: 2002-03-22
PRIOR APPLICATION NUMBER: 60/281,261
                                                                                                                                                                                                                                                                                                                                            FILE REFERENCE: MPI00-5350MNIM
CURRENT APPLICATION NUMBER: US/09/759,130B
CURRENT FILING DATE: 2002-09-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Persson, Egon
TITLE OF INVENTION: Coagulation Factor VII Derivatives
FILE REFERENCE: 6286.200-US
                                   PRIOR FILING DATE: 2000-06-30
PRIOR APPLICATION NUMBER: US 09/393,996
PRIOR FILING DATE: 1999-09-10
                                                                                         PRIOR APPLICATION NUMBER: US 09/342,364
PRIOR FILING DATE: 1999-06-29
PRIOR APPLICATION NUMBER: US 09/608,452
                                                                                                                                                                                                                                                                PRIOR FILING DATE: 2000-01-07
PRIOR APPLICATION NUMBER: US 09/559,497
PRIOR FILING DATE: 2000-04-27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Millennium Pharmaceuticals,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NUMBER OF SEQ ID NOS:
                                                                                                                                                                                       PRIOR FILING DATE: 1999-06-14
                                                                                                                                                                                                           PRIOR APPLICATION NUMBER: US 09/333,159
                                                                                                                                                                                                                          PRIOR APPLICATION NUMBER: US 09/578,063
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                          PRIOR APPLICATION NUMBER: US 09/479,249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NAME/KEY: VARIANT LOCATION: (1)...(
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 ANAFLXXLRPGSLXRXCKXXQCSFXXARXIFKDAXRTKLFW 41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 ANSFLXXLRHGSLXRXCIXXICDFXXAKXIFZDVDDTLAFW 41
                                                                                                                                                   FILING DATE: 2000-07-14
                                                                                                                                                                     APPLICATION NUMBER: US 09/596,194
                                                                                                                                                                                                                                                                                                                                                                                                                    HOLTZMAN, DOUGLAS A
INVENTION: NOVEL GENES ENCODING PROTEINS HAVING
INVENTION: PROGNOSTIC, DIAGNOSTIC, PREVENTIVE,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (1) \dots (406)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Barnes, Thomas S
Kirst, Susan J
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Fraser, Christ
Sharp, John D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       McCarthy, Sean a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Myers, Paul S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mackay, Charles R
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Goodearl, Andrew
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Wrighton, Nicolas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Leiby, Kevin R
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Application US/09759130B
p. US20030022279A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
NUMBER: US
: 2000-06-23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         47.78;
70.78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Any Amino Acid
               09/602,871
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ω
--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 95; I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3.8e-08;
9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 406;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                    THERAPEUTIC,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                      AND OTHER
```

```
RESULT 12
US-09-759-130B-312
; Sequence 312, Application US/09759130B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Вþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δõ
                                                                                                                                                                                                                                                                                                                                                        ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ; ORGANISM: Homo sapiens US-10-189-123-43
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-10-189-123-43
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-759-130B-313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 43, Ap
Publication No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Similarity 41.3
Matches 14; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SOFTWARE: PatentIn version 3.1 SEQ ID NO 43
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQ ID NO 313
                                                                                                                                                                                                                                                                                                                                                                                                                         Matches 14; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
   TITLE OF
TITLE OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR APPLICATION NUMBER: US 09/596,194
PRIOR FILLING DATE: 2000-06-16
PRIOR APPLICATION NUMBER: US 09/342,364
PRIOR FILING DATE: 1999-06-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CURRENT APPLICATION NUMBER: US/10/189,123
CURRENT FILING DATE: 2002-07-02
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: BARNES, Thomas S.
TITLE OF INVENTION: ANTIBODIES HAVING DIAGNOSTIC, PREVENTIVE, THERAPEUTIC,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: KIRST, Sus
APPLICANT: HOLTZMAN,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NUMBER OF SEQ ID NOS: 460
SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRIOR APPLICATION NUMBER: US 09/420,707 PRIOR FILING DATE: 1999-10-19
                                                                                                                                                                      APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FILE REFERENCE: 10147-11U3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT:
                                                                                                                      APPLICANT:
                                                                                                                                       APPLICANT:
                                                                                                                                                                                                                     APPLICANT: Millennium Pharmaceuticals, Inc.
                                                       APPLICANT
                                                                      APPLICANT
                                                                                       APPLICANT
                                                                                                       APPLICANT
                                                                                                                                                       APPLICANT:
                                                                                                                                                                                        APPLICANT:
                                       PPLICANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LENGTH: 96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ENGTH: 96
                                                                                                                                                                                                                                                                                                                                                        46 GNLERECNEELCNYEEAREIFVDEDKTIAFWQEY 79
                                                                                                                                                                                                                                                                                                                                                                                       11 GSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         46 GNLERECNEELCNYEEAREIFVDEDKTIAFWQEY 79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        11 GSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                         Local Similarity
      INVENTION:
                        INVENTION:
                                                                                                                                                                Fraser, Christ
Sharp, John D
                                                                                                                                                                            McCarthy, Seam a
Fraser, Christopher C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FRASER, Christopher C. SHARP, John D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Application US/10189123
GOODGEARI, ANDREW
HOLLEMAN; DOUGLAS A
FENTION: NOVEL GENES ENCODING PROTEINS HAVING
FENTION: PROGNOSTIC, DIAGNOSTIC, PREVENTIVE, THERAPEUTIC, AND OTHER
                                                                                                                                 Rirst, Susan J
                                                                                                   Myers, Paul S
                                                                                                                     Mackay,
                                                                   Wrighton, Nicolas
                                                                                Leiby, Kevin R
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Susan J
                                                                                                                     Charles R
                                                                                                                                                     Thomas S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          42.2%;
41.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                         42.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Douglas A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2002-07-02
                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8;
                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 84; DB 9;
Pred. No. 8.8e-07
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 84; DB 9;
Pred. No. 8.8e-07;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                         12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          12; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 96;
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 96;
                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AND OTHER
```

ď

QУ

```
; ORGANISM: Homo sapiens US-10-189-123-42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; ORGANISM: Homo sapiens US-09-759-130B-312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 13
US-10-189-123-42
 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQ ID NO 312
                                  Query Match
                                                                                                                                           SEQ ID NO 42
                                                                                                                                                                                                                                                                                                                                                                                                                                GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 42, Ap
Publication No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
                    Best
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best
                                                                                                                                                                                                                                                                APPLICANT: FRASER, Christopher C.
APPLICANT: SHARP, John D.
APPLICANT: BARNES, Thomas S.
TITLE OF INVENTION: ANTIBODIES HAVING DIAGNOSTIC,
FILE REFERENCE: 10147-1103
CURRENT APPLICATION UNMBER: US/10/189,123
CURRENT FILING DATE: 2002-07-02
                                                                                                        LENGTH: 20
TYPE: PRT
                                                                                                                                                             SOFTWARE: PatentIn version 3.1
                                                                                                                                                                            NUMBER OF SEQ ID NOS: 100
                                                                                                                                                                                                               PRIOR APPLICATION NUMBER: US 09/342,364
                                                                                                                                                                                                                               PRIOR APPLICATION NUMBER: US 09/596,194 PRIOR FILING DATE: 2000-06-16
                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LENGTH: 20
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SOFTWARE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR FILING DATE: 1999-10-19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRIOR FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION NUMBER: PRIOR FILING DATE: 2000-06
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRIOR FILING DATE: 1999-06-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR APPLICATION NUMBER: US 09/596,194
PRIOR FILING DATE: 2000-07-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRIOR APPLICATION NUMBER: US 09/578,063 PRIOR FILING DATE: 2000-05-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRIOR FILING DATE: 2000-04-27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRIOR APPLICATION NUMBER: US 09/559,497
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CURRENT APPLICATION NUMBER: US/09/759,130B
CURRENT FILING DATE: 2002-09-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TITLE OF INVENTION:
                                                                                                                                                                                              PRIOR FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRIOR APPLICATION NUMBER: US 09/342,364
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRIOR FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION NUMBER: US 09/479,249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TILE REFERENCE: MPIO0-5350MNIM
Local Similarity hes 14; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     46 GNLERECNEELCNYEEAREIFVDEDKTIAFWQEY 79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    11 GSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Local Similarity
les 14; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICATION NUMBER: US (FILING DATE: 2000-06-23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: US 09/420,707
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  209
                                                                                                                            209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FastSEQ
                                                                                                                                                                                                                                                                                                                                                                                           HOLTZMAN,
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Application US/10189123
   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                US20030082586A1
                                                                                                                                                                                                                                                                                                                                                                                                               Susan J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1999-09-10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1999-06-14
                                                                                                                                                                                              1999-06-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2000-06-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2000-01-07
                                                                                                                                                                                                                                                                                                                                                                         N, Douglas A.
Christopher C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         42.2%;
                    42.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        _us_09/393,996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US 09/608,452
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US 09/333,159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         09/602,871
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 84;
Pred. No.
                    Pred. No.
                                 Score 84;
   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                      DB 9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 9;
                    .le-06;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .1e-06;
                                    Length 209;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 209;
                                                                                                                                                                                                                                                                                                                         PREVENTIVE, THERAPEUTIC,
 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
   0;
   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0
   0
                                                                                                                                                                                                                                                                                                                           AND OTH
```

₽

46 GNLERECNEELCNYEEAREIFVDEDKTIAFWQEY 79

```
₽
                                                                                                                                                                     US-10-189-123-40
                                                                                                                                                                                        RESULT 15
                                                                                                                                                                                                                                                                                                                                                                                                                        ; ORGANISM: Homo sapiens US-09-759-130B-310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-759-130B-310
                                                                                                      Sequence 40, Application US/10189123 Publication No. US20030082586A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 310
LENGTH: 226
                                                                                                                                                                                                                                                                                                                                    Query Match 42.2%;
Best Local Similarity, 41.2%;
Matches 14; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: GOODEATI, Andrew
APPLICANT: HOLTZMAN, DOUGLAS A
TITLE OF INVENTION: NOVEL GENES ENCODING PROTEINS HAVING
TITLE OF INVENTION: PROGNOSTIC, DIAGNOSTIC, PREVENTIVE, THERAPEUTIC, AND OTHER
TITLE OF INVENTION: USES.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRIOR APPLICATION NUMBER: US 09/479,249
PRIOR FILING DATE: 2000-01-07
PRIOR APPLICATION NUMBER: US 09/559,497
PRIOR FILING DATE: 2000-04-27
PRIOR APPLICATION NUMBER: US 09/578,063
PRIOR FILING DATE: 2000-05-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CURRENT APPLICATION NUMBER: US/09/759,130B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FILE REFERENCE: MPIO0-5350MNIM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Millennium Pharmaceuticals, Inc
                                                                                                                                                                                                                                                   11 GSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICATION NUMBER: US 09/393,996
FILING DATE: 1999-09-10
APPLICATION NUMBER: US 09/602,871
FILING DATE: 2000-06-23
APPLICATION NUMBER: US 09/420,707
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICATION NUMBER: US 09/333,159
FILING DATE: 1999-06-14
APPLICATION NUMBER: US 09/596,194
FILING DATE: 2000-07-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FILING DATE: 1999-06-29
APPLICATION NUMBER: US (
FILING DATE: 2000-06-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICATION NUMBER: US 09/342,364
KIRST, Susan J.
HOLTMAN, Douglas A.
FRASER, Christopher C.
SHARP, John D.
BARNES, Thomas S.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mackay, Charles R
Myers, Paul S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Barnes, Thomas
Kirst, Susan J
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Fraser, Christ
Sharp, John D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         McCarthy, Sean A
Fraser, Christopher C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Leiby, Kevin R
Wrighton, Nicolas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Application US/09759130B o. US20030022279A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1999-10-19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Thomas S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US 09/608,452
                                                                                                                                                                                                                                                                                                                                 Score 84; DB
Pred. No. 2.2e
8; Mismatches
                                                                                                                                                                                                                                                                                                                                                            2.2e-06;
                                                                                                                                                                                                                                                                                                                                                                                 DB 9;
                                                                                                                                                                                                                                                                                                                                                                           Length 226;
                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                    0; Gaps
```

```
В
                                                                                                               QY. 11 GSLXRXCIXXICDFXXAKXIFZDVDDTLAFWSKH 44
Search completed: May 13, 2003, 14:09:24 Job time: 20 secs
                                                                                                                                                                                                                                          ; ORGANISM: Homo sapiens US-10-189-123-40
                                                                                                                                                                                                                                                                                NUMBER OF SEQ ID NOS: 100
SOFTWARE: PatentIn version 3.1
SEQ ID NO 40
LENGTH: 226
TYPE: PRT
                                                                                                                                                            Query Match
Best Local Similarity
Matches 14; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                          CURRENT APPLICATION NUMBER: US/10/189,123
CURRENT FILING DATE: 2002-07-02
PRIOR APPLICATION NUMBER: US 09/596,194
                                                                                                                                                                                                                                                                                                                                                                                   PRIOR FILING DATE: 2000-06-16
PRIOR APPLICATION NUMBER: US 09/342,364
PRIOR FILING DATE: 1999-06-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TITLE OF INVENTION: ANTIBODIES HAVING DIAGNOSTIC, PREVENTIVE, THERAPEUTIC, AND OTH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FILE REFERENCE: 10147-11U3
                                                                              63 GNLERECNEELCNYEEAREIFVDEDKTIAFWQEY 96
                                                                                                                                                              Conservative
                                                                                                                                                                            42.28;
                                                                                                                                                         Score 84; DB
Pred. No. 2.2e
8; Mismatches
                                                                                                                                                                            DB 9; 1
2.2e-06;
                                                                                                                                                                                               Length 226;
                                                                                                                                                            0
                                                                                                                                                            0;
```

OLES WANTED TO THE STATE OF THE